CIOs, vendors beware! Power users and powerful technology can be a fatal combination. Leadership Series follows page 32.

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Users press to cut PC costs

Management issues stalk desktop options

By April Incols

THE DIZZYING ARRAY OF DETsonal hardware options that are ended to cut costs and simpli fy deaktops may instead create bigger management problems. Users are unlikely to reap sig-

managers find a way to integrat and manage the plethora of devices now aimed at them, analysts said. They said PC managers who are overwhelmed by a flood of computing options that include handhelds, laptops, net-

work computers, NetPCs and desktop PCs should stay focused on management costs. Nathan Brookwood, an ana-PC costs, page 125

nificant cost savings unless Users say direct sales

By Mindy Blodgett Stewart Deck and Matt Hamblen

> USERS ARE increasingly turn ing to direct sales as a cheaper. more satisfactory way to purchase PCs and laptops, with the added bonus of improved ser vice and support, industry ob-

servers said The direct sellers don't give up as much margin to resellers so they can come in at a mon attractive price point," said Chris Goodhue, an analyst at

Gartner Group, Inc. in San lose Calif. He said the direct model lets manufacturers get to know their customers better, which in turn allows them to be very re-Goodhue said a Dell compu-

ter "can come in at 10% or even ao% below a Compag or a Hewlett.Packard or an IRM, depending on the size of the order and the company, and the negotia-Direct sales, page 125

cheaper, faster

Welcome to www. vou-owe-tax.com

Ry Patrick Thibodeau WILL MEMBERSON'S DV NO

began with a knock on his door. An auditor from the Tennessee Department of Revenue said Henderson owed more than \$100,000 in sales taxes that his Internet access service should

tronic commerce and taxes, said have collected from 13,000 sub-Charles R. Beaudrot, an attor scribers ney at Morris, Manning & Mar Henderson, owner of U.S. Intin II P in Atlanta ternet. Inc. in Knorville, Tern.. hadn't collected the taxes because the state tax agency said in 1994 that his service was exempt. But two years latter, the de-

guing that the company is a

vice because it transmits electri-

le telecommunications ser-

INSIDE THIS ISSUE

It is a war that will spill over into the world of Internet shopping sites, Beaudrot and other experts predicted. Already, electronic-commerce partment changed its mind, ar-

cal impulses. So the state now

requires Henderson to collect the taxes, although it has backed

The effort by tax-hungry

states to collect taxes from Inter-

net service providers "is the first

skirmish in the war" over ele-

off the retroactive claim.

sites face a hodgepodge of state laws, and online merchants are worned that the mere presence Tax laws, none 26

IBM to give Java cross-platform company

► Smalltalk, Basic go platform-independent By Sharon Gaudin developing the Universal Virtual

Machine, which will let develop-BY YEAR'S END. lava won't be ers use other languages to build the only cross-platform kid on the black

platform-independent applications. IBM officials said UVM IBM last week confirmed it is will enable the company's ASSESSIFTS DODGEDOODS CAR-RT SORT OR COURS #46103UTV3008R003# JUL 96 001 010617

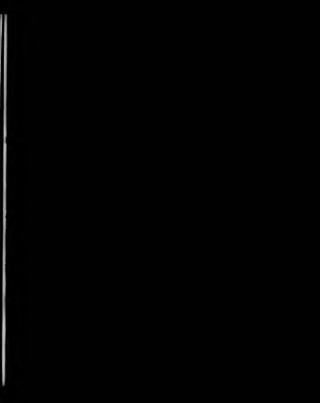
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for Java, Basic and Smalltalk to write applications that run seamlessly on multiple plat-A virtual machine belos

translate an application's language into code that an operat ing system can understand. Sun Microsystems, Inc.'s Java Virtu-al Machine translates Java code into a language understood by various individual operating systems — whether a Unix flavor.

Windows or Apple Computer, Inc.'s Mac OS. IBM's UVM is being de

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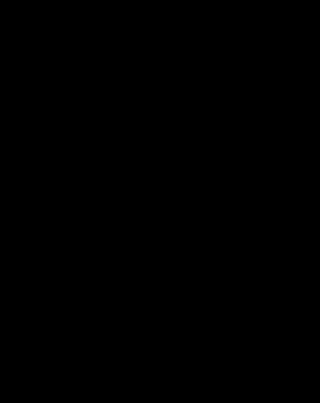
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idows 95 nd Support for Destination Systems 9





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 Buccultury as company gets intended making IS the big major on campus.

ETC

"I was tired of being a death merchant."

IS job market demands more than technical skills

By Mitch Wagner

INFORMATION SYSTEMS managers with Internet skills can still command top dollar—and are likely to continue to do so for years. But they need a broad range of other IS and business skills to compete in the job manket, said IS managers interviewed last week at the Netscape Communications Corp. developers conference here.

"You have to have a much broader skill set. The people getting hired, getting top salaries, are not the ones with narrow skills. They have top programming skills, they know networking and databases, and they know bussness rules."

said Bob Ray, a systems engineer at Geometric Results, Inc. in Southfield, Mich., a World Wide Web development subsidiary of Ford

subsidiary of Ford

Motor Co. - Bob |

"And [they] have

good communications skills.

good communications skills. You can put them in front of a customer." Ray added.

When the Internet first became banded about as a business tool, college students who knew Hypertext Markup Language (HTML) and bow to set up an Internet server drew high salarises immediately.

HTML OLD HAT

"Look at what's happened to HTML When I graduated from codlege, nesholy knew how to do it." said On Behat, 27, a computer analyst at The Goodyear Tire & Rubber Co. in Akron. Ohio, who graduated in 1994. "Now the University of Michgan is going to make it a requirement to receive a degree. That'll make that skill less in demand."

high — typically \$60,000 to \$90,000, according to a study Meta Group, Inc. in Stamford. Conn., will release this week. But now, basic Internet skills are becoming common, applications are becoming more complex and requirements are more or plex and requirements are more.

Technical skills now required of webmasters include Java. C++ and networking — to connect Internet sites to legacy systems. And webmasters also are required to have people skills to deal with users and, increasingly, business partners with access to the corporate intranet, according to IS managers who oversee Internet and intranet

One example is Sachs Health Care Information Specialists in Evanston, Ill. The company collects medical records and performs statistical analysis on the records for hospitals.

The company wants to use

The company wants to use the Internet to distribute results to hospitals. That requires more than Internet skills. Webmasters must understand directs systems, understand the nature of medical records and conddentiality, be proficient in security and be able to talk to counties.

"The people getting hired, getting top salaries, are not the ones with narrow skills."

- Bob Ray, Geometric Results

terparts at Sachs's customer

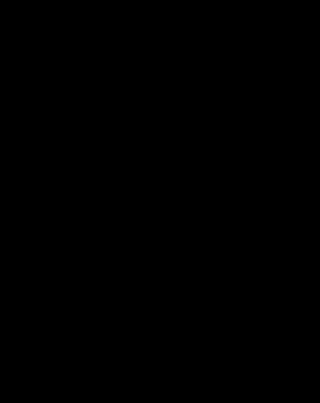
"The Internet as a tool. You can be a mechanic, someone who makes the tool, but the money will be for someone who can use the tool to create content." said Terrance Roddy, a semor software engineer at Sachs. But although the increasing

complexity of the Internet requires technologists to generalize, new categories of Internet specialists are emerging, said David Foote, an analyst at Meta Group.

Web workers are dividing into 14 categories of technical speculasts on our side and content creators — who often have marleting buckgrounds — on the other.

At The Charles Machine Works, Inc. in Perry, Okla, an understanding of business processes is already considered vital. Instead of hiring Internet specialists, the company trained and promoted internal staff.

"They'd rather take people who know the business and let them learn the technology," said Evan Luthye, an IS application developer at Charles Machine Works. "If someone came in here and said," I can write HTML. I want to grand a year, they'd be laughed out of the office."





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"I was tired of being a death merchant."

IS job market demands more than technical skills

Ry Mitch Women SAN TOSE CALLE.

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who know the business and let them learn the technology said Evan Luthic, an IS applications developer at Charles Machane Works. "If someone came HTML I want 50 grand a year. they'd be laughed out of the

Hat trick

to draw comp

ant. WebTV and SELGen

RICH TENNANT



FORGOT TO LOG OFF AGAIN

Netscape to post fix for browser bug

▶ Bug catcher alleged to squeeze company for bigger bounty

By Mitch Wagner, Stewart Deck and Sharon Machin

NETSCAPE COMMUNICATIONS Corp. late Friday announced a bug fix for a security hole in its browsers that lets webmasters under certain circumstances read any file on the hard disk of any user connected to their World Wide Web sites. The fix will be posted to Netscape's Web site early this week /uraw. metscape.com).

Several security consultants and the company downplayed the bug's impact. A spokeswoman noted that it affects all versions of its Navigator browser

stretching back a year and half and that no one had discovered the bug until last week. The Danish consultant who

found the bug - Christian Orellana, a8, of Cabocomm Co. in Aarhus, Denmark - said the full file name and directory of a file are needed to exploit the

GHEST BIDDER? Netscape has long had an open offer of \$1,000 and a free T-shirt to anyone who discovers a bug in its browsers But Netscar claims that Orellana threatened to take his information to anoth-

er bidder unless the company ponied up more than \$2,000. Netscape officials said that while waiting on Orellana, its own developers and consultance were able to reproduce the bug.

Netscape gave Computeran a copy of an electronic mail nessage allegedly sent by Orel. lane that said in part: "I think the person most pasted for handling this, is someone in charge of the company check book (-;

Orellana densed holding the bug fix hortage. He said he would have been willing to give the information to Netscape today for whatever it thought was fair - even for free

He said he thinks his efforts are worth more than \$1,000 and Netscape should expand its bounty program.

Orellana took his story to CNN, which reported the bug Thursday. CNN officials said he successfully demonstrated the bug. Orellana declined to reproduce the demo for Computerworld late Thursday, Cl enough to churn out such gran-

New Reader's Digest CIO a real data mining buff

By Thomas Hoffman

OAVIO H. STARE, the concenial chief information officer at New York-based ITT Corp., has bolted for greener pastures - literally and figuratively - by joining The Reader's Digest Association, Inc. as its top technology honcho. Starr gave several reasons for

the switch: a shorter, more scenic commute to Render's Digest's Pleasantville, N.Y. headquarters from his home in Ridgefield, Conn., and an opertunity to get out from under ITT's defense wing, one of three divisions run by ITT in addition to its financial services and hos-Said Starr, 46. "I was tired of

being a death merchant." BROADER VIETAS

But the biggest motivator was an opportunity to "push the edge" on a massive data ware house at Reader's Digest that contains detailed information on 77 million households worldwide packed into eight Storage Technology Corp. siles that make its data center "look like NASA," Starr said

Reader's Digest "has been exforing a lot of sophisticated data mining techniques and well, I'm a real data mining buff," said Starr, who will tour the firm's data center in the U.K. this week after just so days on the job. Starr said he hopes to beef up

Reader's Digest's data analysis capabilities by developuse more mbust data minung tools for marketing representatives to use to ferret out pofor its gardening and other publica-

Most of those mining tools will have to be develin-house, Starr said, because few third-

ular information Already, Starr has been capti vated by Reader's Disest, whose tony headquarters is protected

like Fort Knox. When Starr first visited this spring, he was stunned by the company's iron-clad security. "I thought ITT had a lot of security with its defense business, but (Reader's Dipret's

security| blew away," he said. Starr later learn that the publishi company's head quarters houses ssive collection of priceless art by Pi-

casso, Matisse and other painters. "That explained the tight security — it's an tion," Starr said. He will help them store their

party applications are powerful other gems. C

FAULTY TRAVESMISSIONS: Car Tall's Click and Clack offer tipe on how to partay an MIT education into a career in soile repair. In Profiles, on Monday.

SAP to add data warehouse

SAP plans a demonstration in

August at the U.S. user group

were interested in actting pre-

ties with their R/s systems, but

they need to see the technology

John Lawrence, who runs the management systems at Dutch

oil giant Shell International Ex-

ploration and Production BV in

The Hague, said his company

will delay a decision until after

If they build it according to

the conference in Orlando.

European SAP users said they

conference in Orlando, Fla.

built data warehouse cano

R/3 system will allow queries from desktops

By Randy Weston AMSTERDAM

GERMAN SOFTWARE GIRE SAP AG last week unveiled a plan to embed data warehousing capabilities in its flagship R/3 husiness process software system.

The announcement, made before 5,200 attendees at the Sapphire European user group conference, means companies that organize their businesses around the R/s system will be able to add data warehouse queries to their end users' desktops,

SAP officials said. The data wavehouse is scheduled for early release in October

sound principles, then it will be worthwhile." Lawrence said. "We would much rather buy a and general release next March solution than build one." Lawrence said SAP would need to make cure the transport

tion processing in R/3 stays separate from the analytical processing required by a data warehouse. Also, he said, the package would need to replicate data warehouse information between his headquarters and remore offices

So far, SAP officials said, the company plans to include that kind of functionality in its em-SAP is building the ware-

house so it can be ported to earher versions of R/3, including Versions 3.0 and 3.1. It will also link to other software systems so data can be extracted from point-of-sale data management applications or products from Oracle Corp. or The Baan Co. fim Shepherd, an analyst at

Advanced Manufacturing Resources, Inc. in Boston, said it makes sense for an application vendor such as SAP to take on the online analytical processing and data warehousing market.

"To have a data warehouse comine from an application vendor means users won't have to build a data warehouse. They won't have to consolidate and re-

standard reports that they currently do," Shepherd said Using the estimate by Meta Group. Inc. in Stamford. Conn. that it takes 18 to 16 months to build a data warehouse, SAP of-

ficials said they expect their embedded functionality to cut that time by 60% or more. But that labor-saving claim

isn't slowing Pirelli SpA from going ahead with its own data warehousing project. Arrigo Andreon, director of

information systems at the Milan, Italy-based tire maker, said although his company is stan dardizing its international operations on R/3, SAP is too late with its data warehouse. Pirelli is too heavily invested in build ine its own warehouse at a test site using a system from Busi ness Objects SA in San Jose. Calif. Andreoni said. []

ON THE HUMOROUS SIDE



TRESSFUL TIMES call for drastic measures at the office. Learn how some information systems organizations use humor and hijinks regularly as elixirs. Managing, page 75

LICK AND CLACK TAPPET, also known as Ray (left) and Tom Magliozzi, host NPR's Car Talk, Editor Paul Gillin went to the MIT grads seeking parallels between information technology and automobile repair. He was forced to settle for insults, wisecracks and a dissertation on college mixers. In Depth, page 97



Oracle puts Sedona on back burner

REDWOOD SHORTS, CALIF.

OBACLE COSP.'s much-hyped Sedona object development tool is in deep limbo and appears unlikely to materialize as a fullfledged product.

Sedona has been in beta testing since January, and Oracle was supposed to start limited shipments of it next month. It had been positioned as a key piece of Oracle's network computing architecture and an imrtant companion to the obect-enabled Oracle8 database. which will be released next

But Oracle Chairman Larry Ellison at an Oracle8 briefing

here said he put Sedona on hold after the company's in-house programmers balked at using the tool

"It would be silly for us to release a new tool that competer with our existing ones when our own application development team isn't signed up," Ellison said. "We have to have a unified strategy or we'll confuse the bell out of the market."

INC FEATURES

The applications group complained about missing features. such as a lack of Java support after getting hold of the latest version of Sedona, Ellison said. As a result, the object tool has reverted to being "a work

can't tell you when, it will be

Oracle8 beta tester Richard Adelson said Oracle officials have started describing Sedona as a collection of technologies that could be embedded in oti products rather than as a stand-"Obviously, there's a little dis-

sension internally, but I think [Ellison] did the right thing ison, enterprise architect at The Hartford innurance company in Hartford, Conn. They've never been very definite about where they were going to fit Sedona in, and now they're going to be forced to be much more crisp about

Oracle officials had described Sedona as the firm's nextgeneration development envinment, but it lost some strategic luster this year after Oracle computing role as a tool for



announced plans to add object support to its Developer/2000 and Designer/2000 tools Even so, observers expected Sedona to play a key network

ng add-on modules that could plug in to Oracle8 or apnlication servers. The problems with Sedona in noive its front-end tools for building application screens and graphical user interfaces

rather than its object repository and middleware pieces, Oracle uces said Prayeen Rao, director of inter-

active and information systems agineering at Time Warner Inc.'s cable TV unit in Maitland. Fla. asked for a beta copy of Sedona earlier this spring. "But they said we were too late, and now I guess I know why," Rac

Oracle8 upgrade coming soon - but with a catch

By Craig Stedman REDWOOD SHORTS CAUE

FOR A CHANGE, users of Ora cle Corp.'s applications won't have to wait from here to eterni ty before they can upgrade to the new Oracles database

But there is one catch: That applies only to customers who migrate to the Oracle Applications 10.7 release that became Users of Oracle Applications

10.7 will get cleared for takeoff with Oracles within a week or two after the database is formal ly launched June 24. Oracle officials said last week. The compa my previously took six months or more to certify its applications

The certification process was especially slow for Oracley, a, the last major database upgrade. It was released in February 1996 but didn't get the seal of a precoval from Oracle's applications group until this February — a wait that left users chafine ICW

fan, aol.

They got a lot of heat from the munity on that," and Michael Prince, chief informa tion officer at Burlington Coat Factory Warehouse Corp. in Burlington, N.J. He said such precemeal releases complicate 'the matrix of things that have to be accomplished before you can upgrade to a new database That won't be the case with

Oracle8 - but only for overy who are ready to make the jump to Oracle Applications 10.7. That is the only applications release that will get year 2000 compliance |CW. April 14|, and company officials said it also is the only one being certified for

ert for Gracied object

unit in San Francisco, said certi fying earlier applications releases with Oracle8 would have been "a waste of development resources," because Oracle is actively prodding users toward Version to 7.

Oracle8, which was first dis cussed by Oracle officials five years ago, is supposed to provide mainframe-like transaction processing canabilities, including improved scaling in terms of both data and end users. The new database also adds data warehousing features and irenal support for object technology.

Ken tacobs, vice president of product strategy at Oracle, said the drawn-out Oracley, a certifi-

DELIVERY TIME FOR ORACLE acie6 Versice 8.0 with support for Oracles

Second half of this year Second half of this year

loper's hit late this year; general server-based Jave support

The need to get with the 10.7 cation process was "embarrass rogram "does make uperades ing," especially because SAP harder, but it's typical of what AG released its rival R/3 softpeople have to face every day." ware on that database before Or-Prince said. Burlington Coat is acle's own applications became converting an initial finance ap-

plication to 10.7 now and ex-Oracle changed sts internal pects to move to Oracle8 in the development procedures to ensure that a repeat wouldn't Nancy Lane, manager of fihappen, Jacobs said during an Oracle8 briefing at company ncial systems at Bechtel Corp.'s government contracting headquarters here. [7]

IBM aims to speed up AS/400 recovery time

By Tim Ouellette

12M WANTS TO harden up the soft underbelly in the AS/400's availability features. The AS/400 is well-known as

a reliable machine that rarely fails. But when the midrange platform does crash, it is value able to lone delays in restarting the system - valuable time for s platform that many midsize sites depend on to run their

"AS/400 is a very reliable orm. But when it takes a his for downtime, you are normally out for a long time," said Donni Scott, an analyst at Gartner Group, Inc. in Stamford. Conn.

Windows NT and Unix serv ers fail more often than AS/ doos but can recover more quickly. Scott said.

Part of the problem is that the AS/400's integrated architecture, with storage rightly tied to the system, makes recovery a slow process. Most failures are ned to the disk subsystem or power outages, Scott said.

FOUR DAYS DOWN A user at last week's AS/400

Environment conference in Dal must tweek their programs to las said a recent storm caused s run effectively in a parallel sys-12-hour power outage at her plex cluster. firm, resulting in 96 hours of downtime when two mirrored AS/40 os failed.

dardize the way Web sites de-

Gartner expects the market

for ASIA00 availability clusters to grow by at least 75% in the nest two years In the near term, some inters

have turned to cross-platform systems management software for preventive management, That is important as the AS 400 begins to play a more important and integrated part in the rest of a company's multiplatform computer operations, instead of standing alone

late and analyze [AS/400] prob lems in a distributed environment, which we weren't able to do before," said Lars Carlasio, an information systems marer at SKF DataService AR in Sweden. CI

Industry floods feds with privacy pitches By Sharon Machi The Open Profiling Standard

and Mindy Blodgett

THE COMPUTER industry last week flooded the Federal Trade Commission (FTC) with multiple Internet privacy proposals they hope will show that the industry can regulate inself. Microsoft Corp. said it will

join rival Netscape Communications Corp. and about 60 other vendors to develop a standard for storing personal information in an individual's World Wide Web browser. Users then could decide whether to grant a Web site permission to collect all or ne of that data

"The obstacle just technical as much as convention," said Josh Bernoff, a senior analyst at Forrester Research, Inc. in Cambridge, Mass.

(OPS) was announced several weeks ago as a project to be subitted to the World Wide Web Consortium in Cambridge Mass. The addition

of Microsoft makes it much more likely that the resulting protocols will become an industry standard.

ciala said OPS prod ucts are probably 12 to 18 months away. I don't know which I feel more

comfortable with, the federal enment or Microsoft setting the standard," said Chris Pizey, webmaster at the Universal Press Syndicate in Kansas City. Mo. "I think in a year, Microsoft

will own the Internet. ... So it as likely they will set the privacy standard, and that is just the way it will be." Tracking Web visitoes "is an

extremely impor Eight detehase tant and valuable aspect of the Interservices mend the net we other main won't add stream media," Pizey said. "[But] if people don't feel rketine det ch as nam comfortable about using the Internet could defeat things like electron-

> The World Wide Web Consortium, which oversees Web technical standards. unveiled another project at the FTC's privacy hearings last week. The Platform for Privacy Preferences (Ps) would stan-

scribe their policies on handling personal data they collect and let users decide how much data they want to give. OPS then could be used to implement the data enchange The FTC held the hearings to

consider whether federal regulations are needed to safeguard pringey on the Internet Privacy advocates say Internet users today have little control

over data they turn over to Web sites and no way to know how that information is used. A study released last week by the Electronic Privacy Informa tion Center in Washington

found that only 17 of 100 popu lar Web sites have privacy polices, and none met what the center considers "bosic stan dards for privacy protection. Only one site let uters access information in their own file and revise it. (1)

Bill Zeitler, general manager of the AS/400 division, told the ence's 390 attendees that IBM will improve the system's

To do that, IBM plans to streamline the internal workings of the AS/400 to speed up recovery times by up to 60%. IBM also pledged to improve the way users can perform ntenance, without down time, build an AS/400 cluste ing infrastructure and add clustering capabilities to the OS/400 operating system

TOWARD SYSPLEX Although AS/400 clusters have

existed since 1990. "we will move to something more closely aligned with IBM's (high-end. mainframe] parallel sysplex technology." Zeitler said That means A5/400 chasters

will gain more of the structured. organized way mainframes divide up application processing among one another rather than mirror what is on each

And any new clustering scheme won't require users to alter their applications, Zeitler said. Mainframe users now

UP ALL THE TIME

Although about 40% of the 485,000 AS/400s metalled are aingle systems in a company, users may begin to move more to a reliable clustering scheme to keep applications available all the time, according to Gartner

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NETSCAPE DEVELOPERS' CONFERENCE

A lull in Netscape/Microsoft war

► Companies agree to follow standards in Internet development efforts

SAN JOSE CALLE

MUCH TO THE rehef of many of its users. Netscape appears to be moving closer to a truce with its arch nemens, Microsoft Corp.

Netscape Communications Corp. last week posted an "Open Standards Guarantee" on its World Wide Web site in which it pledged to adopt any standards set by the Internet Engineering Task Force or other standards body, regardless of

the source of the technology. Microsoft, in turn, surprised many by agreeing to support an Internet privacy plan proposed by Netscape and other vendors

ATIBILITY ISSUES

Both pronouncements good news for users gathered here last week for Netscape's Internet Developers' Conference In interviews, many said they leared that the ongoing rivalry between the two browser lead ers could result in incompatibil ities that will make it hard to deploy Web applications in

"It would be great if they rould cooperate," said Glenn Newell, sensor engineering manager of intranet technology National Semico eductor Corp., in Santa Clara, Calif., which has standardized on Netscape's browser, "Some of our

key systems rely on these Internet protocols, and we'd like to be assured that these large companies are on the same page." The two vendors have a way to

'NET RIVALS

here they disagree

about the companies' different object strategies. Netscape supports Java and the Object Monagement Group's Common Obsect Request Broker Architecture. Microsoft is pushing ActiveX, its own object-oriented technology.

If the two contioue on sepa rate object paths, it is unlikely that sites will be able to deploy distributed applications in an environment that includes Web servers from Microsoft and Net-

Other concerns cited include a lack of support for ActiveX components in the Netscape Crossware application framework and the divergence in the

Hypertext Markup Language We moved toward the browser environiment because it was a standard," said John Kay, manager of electronic commerce at Chrysler Corp. in Dearborn, Mich., which uses Netscape browsers and Web servers. don't want to have to tell a supplier [of ours] to go out and get crosoft's (browser) isn't compati-Several users said they picked

Netscape's products because they support open standards. But if Netscape products don't Users also are concerned work with Microsoft offerings - many of which are de facto standards - users will non-

theless face an interoperability "We use Netscape's browset and Microsoft's applications.

and we have no desire to standardize on one vendor's platform," said David Burke, director of communications and client support as Kindercare Learning Centers, Inc. in Montcornery Ala.

David Folger, an analyst at Meta Group. Inc., in Burlin-game. Calif., said a detente could only help Netscape. Efforts to reach Microsoft were unsuccessful. ()

Users applaud vendors' interoperability promise

SAN JOST, CALIF.

WORLD WIDE WES developed at a Netscape Communications Corp. conference here last week cheered the commony's an nouncements of cross-platform technologies for linking legacy data stores and the Internet Felix Gushansky, senior soft ware engineer at Marshall Industries in El Monte, Calif., wants to link a wide variety of legacy mainframe. Units and Netscape's browser because Mi-

desktop systems in a supply-chain network, "This kind of technology will be a big help to us in doing that," he said. Netscape, along with IBM Oracle Corp. and Sun Microsysterns. Inc., last week announced plans to stremethen ties between JavaBeans - a Java-based architecture for linking applications - and the Common Object Re

quest Broker Architecture (CORBA), which is middleware for client/server communica-By using a combination of avaBeans and CORBA, information in various legacy systems can be retrieved by users on the Internet.

Netscape said its Visual Iava-Script tool kit will support CORBA, beginning this week, That means the drag-and-drop

application builder will be able to use the Interpet to seamlessly link programs written in Hyper text Markup Language, Java and other languages across multiple aform

Visual JavaScript, currently in open beta testing, can be downsaded from Netscape's Web site Netscape expects the product to be generally available in Au

JAVABEANS SERVICES Also, in the new version of Netscape's Web and collaboration servers, all services will be ad dressable as tavaBeans. That makes it entire for devel opers to build applications in-

orporating functions such as Web publishing document and electronic mail. The new one shipped last week. The four companies also agreed to submit a specifica-

tion for favaBeans and CORcompatibility to the Object Management Group, for pos-

sible adoption as a vendor-neutral standard. The announcement builds on statements the sendoes made this year supporti CORBA ICW. March 171 and Sun's promise to marry Java-

Hetscape's activities at its developers' conference Shipped Communicator 4.0, a combined browser

and client for groupware, scheduling and messaging

Shipped new versions of servers, featuring improved document management

Announced an alliance with Novell to offer training programs in Internet technology

Using Portola Communications technology

By Rach Cole Comolely

SAN JOSE, CALIF. NETSCAPE communication

corp. is readying its next-generation messaging server, which will boost scalability and offer improved management tures, company officials said last

cials said the next COMMUNICATION weeten of Mac. saging Server will support thousands of users per box when it ships in the first half of next year. It will be part of Apollo, the next release of the SusteSpot bundle, which includes nine

World Wide Web and collabora-Scalability has become a hot issue for messaging servers because it impacts users' IS ownemhip costs. Indeed, users have enticized Microsoft Corp.'s Exchange and Lotus Development Corp.'s Notes for those products' scalability shortcomings.

Netscape scales Messaging Server Today, users typically run a few ing, he said. By the time the hundred users on a Notes or Exchange server.

The upgraded Messaging Server will include technology Netscape acquired when it re-cently bought out Portola Communications, a small messaging company in Palo Alto, Calif.

te technology consists of algorithms that can improve the throughput of In ternet Message Access Protocol based systems, said Ben Horowitz, director of server product

marketing at Netscape. Netscape's current messaging product - Messaging Server 3.0 - shipped last week as part of SuiteSpot 3.0 and is being offered as an enterprise-scale mail server. But with the Apollo release, the software will be much

more scalable. Horowitz said. The Apollo Messaging Server also will have a revamped adintrator's interface and new tools to handle message track-

Apollo Messaging Server is ready, Microsoft is expected to have shipped Osmium, a more scalable version of Exchange. and Lotus will have released its Domino 5.0 upgrade.

Although Netscape is considered an upstart in the electronicmail space, its strategy to build a mail server based on Internet protocols resonates with users. At the company's Internet Developers' Conference here last week, attendees packed a session on Netscape's mail offer-

We do see the Web as the way to go in the mail area, and Netscape does have a leg up in that area," said David Thompson, an analyst in the advanced technologies group at BellSouth in Birmingham, Ala.

The company is seeking to move 40,000 users from Hew lett-Packard Co. OpenMail and is considering Netscape's offer-

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Unauthorized software means headaches for IS

By Lisa Picarille

IS MANAGERS looking to tight en their control over the soft ware installed on users' desktops must contend with users who want to exploit the wealth of free applications downloadable from the Internet.

Although user installation of nonsanctioned software is noth ing new, increased use of the Innet and a proliferation of are-related sites on the World Wide Web has made it easier to find, access and install a wide array of software

This is not a handful of people downloading a screen sav-er," said leffrey Tarter, editor of "Softletter," an industry newsletter in Watertown, Mass This is hundreds of thousands of users dealing with things that can cause major tech-support headsches. Anyone worried about controlling what software sits on users desktops is looking

at a nightmare. SOFTWARE JUNKIES

"I think if I really knew just how much junk some users downloaded. I would have a heart attack," said an information systems director at a large West Coast biotechnology company, who asked not to be identified. These users are also the first ones to come crying when th have system conflicts. We need

to address this before it gets out of hand " The most popular applica-

tions available on the Web share attractive characteristics. Most are free, have small memory requirements, offer functionality that appeals to individual users and often require only minimal

technical adeptness to install. You've got to nip it in the bud by setting up an Internet access policy."

- Carl Norman. Titleist and Foot-Joy

And nearly every software developer has beta releases or trul versions of products on its Web site. Users also can go to a variety of eiter, such as now

shareware.com or unum.download. com, for a huge array of titles. For example, in the week after it shipped, Save-It Software's ByteCatcherX ActiveX Control was downloaded 23,427 times. Users downloaded Microsoft Corp.'s Internet Explorer more than 31,000 times last week man after a weeks on the cite System utilities such as uninstallers, beta releases, compo-

also enormously popular.

net access, to prevent users from downloading applications. But there are several ways to deter them: Set clearly defined Internet access policies, outline specific standards for software installation and, if necessary, install software to monitor Inter-

way, short of eliminating Inter-

CATCH ABUSE EARLY Carl Norman, Lotus Notes administrator at Fairhaven, Mass.

based sporting goods manufac-Titleist and Foot-Joy burer Worldwide, likened Internet use policies to corporate rules on personal use of the selenhouse You've got to mip it in the bud by setting up an Internet access policy and then, like using the telephone only for business, establish that someone is watching to make sure " said Norman, who keeps watch using the Web navigator feature of Notes, which provides detailed reports on users' Internet

access. "Once you do that, I don't think the threat is that Officials at some companies, such as Fireman's Fund Insurance Co., said they don't monttor Internet access and "trust employees to follow the rules "

We have generic policies about bringing in unauthorized software for desktop PCs," said Bill Cox, lead systems engineer at the Novato, Calif., company. There is nothing specific about downloading from the Internet. I know there are more opportunities, and the potential for ments and antivirus software are problems is a disaster, but I'm Observers said there is no not losing sleep over it."[]

· IS spending up

Pressure is on to cut costs

By Thomas Hoffman

technology is up - and so is the pressure on chief information officers to reduce organizational costs through technol A study published this week by Carlshad, Calif-based Com-

puter Economics, Inc., an inrmation systems consulting firm, reveals that c7% of all IS departments in organizati with \$100 million or more us revenue saw a boost in their budgets this year. Information

about the report can be found at computeroconomics com-A vibrant U.S. economy and a greater recognition of the couspetitive value of IT at the cornorate board level are helping drive

the rise in IT spending, accord ing to industry analysts. But for CIOs on the front lines, fatter budgets often mean increased pressure to deliver cost savings and improve productivity. 'There might be marginal to

creases [in 1S spending], but the onus is on [IS executives] to reduce operational costs," said for Fullinwider CIO for Los Angeles County The county's IS budget will

remain flat at about \$450 million through at least next year and won't include any additional funding to help it combat its year 2000 programming problem, Pullinwider said. Fullinwider has spearheaded a countywide telecommuni

estract with Parific Rell instead of having county depart SPENDING ON information ments negotiate individu rates, which are usually higher. That's any vendor's tack - divide and conquer," he said.

Fullinwider isn't alone. Skyway Freight Systems, Inc. saw ire 25 budget go up slightly this year but is still under pressure to use technology to improve productivity and slash costs wherever

For example, Skyway's IS deartment is directing \$150,000 project to migrate its 15 Customer service representatives from mainframe-based dumb terminals to Windows NT workstations. The NT workstr tions allow the representatives to perform various tasks simultaneously by opening up multi-ple windows during customer calls. That has helped the company improve productivity by

The productivity increase ne ites the need to add an estimat ed is representatives this year to handle the additional volumes that come with the company's annual revenue growth of 25% to 10%, said Tom Duck, CIO at the Santa Cruz. Calif-based

roughly so%

shapping firm. The system "should save each of our [customer service representatives) two hours a day in work and cut down on their dead time," Duck said. C

Hacker attack shuts agency site

The U.S. Foreign Agricultural Service shut down its World Wide Web site last week after a hacker allegedly used the system to launch attacks against other on the Internet. The agancy received n complaint that its system was repeatedly sending out connection requests, a popular hacker technique to the up a target system so it can't service other users. The agency, ch is restoring the site and increasing security, und no damage to data on its computers.

Microsoft buys stake in Comcast

in a bid to integrate PCs with talevision, Micross Corp. last week invested \$1 billion in return for an 11.5% state in cable TV operator Comcast Corp. Microsoft dans to buy WebTV Networks, Inc. for similar reas Analysts said the pairing of Microsoft and Comcast will lead to fast cable internet access and result in interactive television. "I suppose Comcast will use a great deal of WebTV and Microsoft technology to build the intertive network," said David Card, an analyst at Inter-nal Data Corp. in Framingham, Mass.

SHORTS 3Com Joins Fast Ethernet frav

3Com Corp. last week unvoiled a Fast Ethernet switch with ports that can operate at either toM or tooM bit/sec. That lets information systems managers han-die rising bandwidth needs without replacing switches. The Santa Clara, Calif., vendor's SuperStack II Switch 3000 to/100 has to perts, costs \$3,495 and ships this month, with Asynchronous Transfer Mode and Gigabit

ernet uplinks due during the next three months IBM to ratchet up Token Ring

BM officials last week said it is working on ways to ennce Token Ring LAN technology, still widely used in its ahops. The Armonk, N.Y., vendor is working on a scheme to retchet up Token Ring's speed from 16M to tooM bit/sec., according to a company spokesman. The spokesman said work is prefit should expect to hear more about the efforts shortly.

intuit downsizes, invests

One day after announcing its plans to cut 9% of its

workforce, intuit, Inc. last week agreed to pay \$40 mil-lion for u stake in internet search firm Excite, Inc. in Mountain View, Calif. Intuit officials said the company plans to market its Quicken Financial Network to Excite's 2.5 million daily users. Redwood City, Calif. based Intuit said its 270-job downsizing plan frees up money

informix drops defectors lawsuit

Informix Software, Inc.'s much-publicized lawsuit against Oracle Corp. over the january defection of 13 in-Formits regimens termed out to be much ade about nothing. Informits, in Meanlo Park, Calif., deopped the suik last week after deciding its frade secrets were adequately protected. Informits also said it "regrets any ternents or allegations" charging the engi closing confidential information to Oracle

HORT TAKE Richard Thoman, IBM's chief financial officer, is moving to Palo Alte, Calif.-based Xerox Corp. to be president and chief operating officer. Thomses, 52, was credited by Wall Street watchers with resuscitisting

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Forget alignment, act like venture capitalists guizes, IS departments are being by

Forum advises IS to focus on technology that makes money

By Thomas Hoffman

Scottmans. Agg.

structure their departments more like
scottmans. Agg.

Scottenaus, Anz. venture capital firms and le-

CIOS WHO WANT to remain information technology leaders are being advised to systems departments should seek inno-

vative technologies that can be used to directly impact their organizations' bottom lines.

Yet today, most forward-moving organizations use IT to improve their productivity and for competitive positioning. The problem is that, with increasing frequency. IS departments are being bypassed on technology projects designed to generate new or increased revenue. That is because many IS groups have rigid structures and are viewed as obstacles to fast implementations.

That was the consensus of speakers and many attendees at last week's Giga-World IT Forum '97 conference here, sponsored by Giga Information Geoup in Combinidge Many

Cambridge, Mass.
It is also a perception that IS executives are trying to come to terms with.
"There's a stigma attached to IS that [IS executives] have to break through," said

Jim Deis, manager of application development at 'the Federal Reserve Bank of Kansas City in Missouri. Much emphasis in 15 has been

sis in 15 has been placed on aligning themselves with the needs of the business units they serve.

But as business units port husiness units.

nesses keep changing themselves, alignment becomes harder to achieve. As such, speed "becomes more important

than alignment," and David Gilmour, chief research officer at Gigs. Marry of the 15 executives at the conference agreed. "This in exactly what we should be doing — providing utility-type services and using technology to go after exervices and using technology to go after new bustness opportunities," and Jack Eflexers, manager of business systems at Honeywell, 4mc/s Space Systems Division in Clearwater Pla.

CONSTANT CHANGE

To survive in the current business climate, their information officers need to learn how to manage constant technological and business changes, said Pasta. M. Wallington, vice president and CIO at Xerou Corp; in Stamford, Conn. To that end, the past is poologue. "We can't look back at [previous] success pairers" because they don't apply to currens" because

rent projects and corporate business models, Wallington said. "We have to formulate new strategies" to more our oppositions forward she

to move our organizations forward, she said. Wallington speaks from experience. In

the early 1990s, she and her staff implemented a standards-based infrastructure for Xerox called IM 2000. Xerox's previous IT infrastructure— "was dearly loved by everyone," and

Xerox's previous IT infrastructure "was dearly loved by everyone," and there was "a lot of meaning and groaning" by skeptical users about the new architecture, she said.

Shortly after Xerox outsourced the deployment and management of IM 2000 to Electronic Data Systems Corp. In 1994, Xerox salespeople began to recognize they could gather more useful inflormation about the products they were selfing. Ferentially, the IM 2000 infrastructure was well-received, Wallington said U.

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ActiveX gets security boost

▶ Microsoft adds time-stamping to Authenticode By Sharon Gaudin low Authenticade 2.0

and Sharon Machin

MICROSOFT CORP. IS UPGS ing its security model for ActiveX to extend the life of ActiveX controls. That meuns users should update their Inter net Explorer browser software if they want to download ActiveX controls after June 30.

The software update. Authen-ticode a.o., will be available from Microsoft World Wide Web site at www.microsoft.com/ ic/security/authors.htm. The other alternative: Surfess can sim-

ply turn off the older Authenticode screening in their browsers to download any controls they encounter. Authenticode allows an ActiveX control to be duritally signed, so Web surfers can decide if they trust its author be

machines. The older version allowed signatures to be valid for only a year, meaning the control had to be verified annually. Version 2.0 incorporates time-stamping. Once code is signed, the signature on that

rading code to their

David Schrier, director of product development at Black Diamond Consulting, Inc. in Portsmouth, N.H., has already downloaded the latest version of Authenticode. He said ActiveX ActiveX Security works

 Active X author gets a digital certificate to sic his or her control one year; once a control is signed, it's valid indefinitely

· Users decide If they went to download ActiveX control by things.

security isn't where it should be, but it is on the way 'ActiveX was sort of a rush job." Schrier said. "It was always sort of inelegant in that the control would expire every year. I can understand my certificate expiring but the fact that the life of my software is only a year is hard to take."

ORE SECURITY HEEDED Schrier said the time stamp will extend the life of his software. but he said he would like to see specific control is valid indefimore security. "As soon as they try to come after the person on the certificate, they can be

gone," be said. The new version of Authenticode will eventually include the ability to revoke a certificate if an author is found to have written malicious code. That will be implemented with Microsoft's Internet Explorer 4.0. expected in heta version within four to ris

Some users remain uncomfortable with the ActiveX security struchare

"You're still on the honor system," said Patrick Connolly, vice nresident of the Internet plat-

form and tools group at Natural Applications Corp., a consulting and freelance development firm in San Francisco, "Someone can still be a jerk and go out there and get a certificate and do bad

MORE ABOUT ACTIVEX ActiveX is a powerful software

component architecture - a souped-up. Internet-enabled offshoot of its original desktop architecture OLE. ActiveX con trols are small programs that can be downloaded across the Internet and run within a

Microsoft has taken a lot of heat because ActiveX controls lack the built-in security of Sun Microsystems, Inc.'s lava. The controls sit directly on the operating system, giving them access to basic computer func-

That is unlike lava's "sandbox" approach, which limits what downloaded code can ac cess. A hostile control would have the access to delete files or shut down an entire system. []

mean competition for Java, but

industry observers genera agreed that building more cross platform applications would ouly benefit Java and its cross-platform push - especially because the UVM technology is built with fava.

Java because most companies

have a heterogeneous environ

ment that might include Unix

Windows or Macintosh ma

chines. Building platform-inde

pendent applications keeps de

velopers from having to port

them, which can be a painful

process, or rewriting an endless

Support for cross-platform computing has made lava. which is an object-oriented langaage focused on the Internet the fastest-growing language on the market. Information systems managers have turned to

ses of code

Operating systems to be supported

B HP-UX B Windows NT

8 Q4 1997

Low-end storage software beats file servers on price

Ry Matt Hamblen Saw Enaucuren

MAY BE YOU DON'T have to buy another file server after all Mylex Corp. in Fremont, Calif. will soon announce software that manages network storage devices at a cost that is about 90% less than buying a file

The low-end network storage software, now called NetEngine will be bundled with hard drives sold by other vendors.

At the Network Storage '97 conference here last week, com pany officials said the product will be formally announced in about a month and have a price tae of less than \$1 000 Analysts and users said the

Mylex product and forthcom products from competitors will give users new options for providing inexpensive storage to workgroups, such as branch offices.

MILAR FUNCTIONS NetEngine is expected to provide the same functions as a network-attached file server, which typically costs \$10,000 or more.

analysts said. With low-end storage management software, workgror members can 'distribute and control access to the data stored on network-attached hard drives and monitor the function of the

Meanwhile, Axis Commu cations, Inc. in Lund, Sweden, last week announced three products that let users attach the popular lornega Corp. Jaz drives

to a workeroup network Pricing for the Axis StorPoint HD starts at \$999. StorPoint HD/4 Jaz is priced at \$2,999 for a box containing a network in-terface and boys for four rG-byte tay hard disks

"I'm really excited about NetEnginel," said David Blak ley, computer systems man at Genencor International, Inc. a biotechnology company in Palo Alto, Calif. Blakley recent spent \$1 million to upgrade the network for the company's tech ogy center and plans to beta-

test NetEngine room "I put in probably too much orage hardware, now that [Mylex] has come up with this product," Blakley said. End users on his 180-node network anslyze digital enapehots of DNA cells - about 1.4M bytes per image - that must be stored for

up to 24 months Myles officials said NetEn gine is ideal for users managing toG to 30G bytes of storage

The product isn't suited for enterprisewide storage needs, but "it's got a potential [use] in one of our 86 remote offices." said Robert L. Eads, chief information officer at American Protective Services, Inc. in Oakland, Olifn

said UVM could benefit devel opers and IS managers Java has attracted so much ration because it can run on all these platforms, but the stability and maturity isn't there yet." Feiman said. "Smalltalk is more than 20 years old. It's ma ture. It's stable. For Smalltalk programmers, this could mean

a second life." But Evan Quinn, an analyst at International Data Corp. in Pramingham, Mass., warned that the benefits of UVM could be lost if IBM doesn't remember the lessons of some of its former technological break

They need to keep it simple and lightweight," Quinn said. They don't need another Open-Doc, that's for sure. It needs to be fast and easy." [3]

Joseph Feiman, manager of RAD Java tools could be a been for application devel advanced technology at Cleveland-based American Greetings.

IBM gives Java cross-platform company CONTINUED FROM COVER 1

and Basic coding, as well as lava. IBM is slated to roll out UVM in the fourth quarter, accorduce to Robert LeBlanc, durector of IBM's Toronto labora-

tory, which has been working on This will help all those people who don't want to learn lava but already know Smalltalk or Basic. And Java sen't an easy language to learn, especially for developers who aren't familiar with object-oriented programming," said Karen Boucher, director of The Standish Group

International line in Dannie Several users said they need to build cross-platform applica-tions, but Java doesn't fit the bill for every project. They said they

signed to translate Smalltalk hope UVM will provide more of a choice. Sometimes I need to write in

Basic. Sometimes I need to write in Java. I almost always need to write cross-platform." said Jean-Pierre Cabanie, computer support manager at Philips Microwave, a division of Philips Semiconductor to

Lurneil, France. "I cannot satisfy the needs of all my users with one language. It's quite vital." ARE THE SPOTLIGHT

Bush around Java's platformdent technology, the introduction of UVM would mean lava may have to share some of the cross-platform limelight that has made it one of the industry's housest technologies. Some usere wondered if that would

I VisualAge for Smalltall I VisualAge for Java I VisualAge for Basic

8 OS/2 8 Solaris 8 Windows 95

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your old stuff
ends up someone
else's problem

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ment ton worry

Net management top worry

▶ Users also cite bandwidth needs and remote access issues

By Bob Wallace

on THE STV of the \$8.5 billion merger of yCom Corp. and remore across gains U.S. Robotics.
the networking industrys largeseed field seek, most customers at user group. The
JCom's usive group meeting last
week were tailing about network management.
In a poll conducted by YCom
in a poll conducted by YCom
management.

In a poil conducted by yCom prior to the meeting, 54% of the roughly 400 users pointed to network management as their largest information technology concern this year, 33% cited the need to boost bandwidth, and 15% worried most about adding remote sites.

MAJOR CONCERN
Attenders said their networks
are expanding rapidly and becoming more instrumental in
business success — making
good management critical. "Is a
major concern for all users, and

can provide everything we need," said Rob McKenna, vice president of global network engineering at Suntakets, Inc. in New York and president of the 5Com user group. The firm uses multiple systems to manage its network. "We're looking for better integration between network ananagement [systems]," he

3 Gom has "made great strides in network management, especially in integrating remote monitoring capabilities (into its Transcend management application)," said Skip MacAskill, an analyst at Gartner Group, Inc., a research and consulting company in Stamford. Comp.

ny in Stamford, Conn.
"They certainly haven't fallen
behind. It's more a case of usens' demands of their vendors
increasing exponentially." he

said. Brad Albers' biggest network management challenge is how

that's because no one vendor to keep a handle on his compocan provide everything we my's nationwide LANs and meed," said Rob McKenna, vice. WANs

Afbers, senior manager of infrom tion services at The Home
Depot, Inc. in Alahnak, wants to
be able to better manage network expansion. His company
currently has 333 stores and
cr opens a new one every four
k days.

"We have superior network services staff, but network management is still a challenge." Al-

MARAGING EXPANSION
That also is the case for Dave
Bastes, assistant vice president
and chief information officer at
valley Children's Hospital in
Gettysburg/Fresno, Calif. Bates
has to make the network keep
up with expansion driven by in-

creasing competition in the health care industry.

"Managed health care has come like a Viking in the night in California," Bates said. "We cover 64,000 square miles in central California and are driving to expand to rural communiing to expand to rural communi-

3Com is focusing its management efforts on its Transtend-Ware policy-based management offering, which lets 15 manageens provide users with varying classes of network performance. And it is expanding its virtual networking technology, which lets IS managers create logical LANs to address changing

workgroups

"[Advanced] network mangenerate will be our salvation," said J. L. Albert, computing and information services director at Oklahoma Saite University (OSU) in Stillwater, Okla, "Our user base moves all over the place and is very demanding. Virtual networking and the tools to marsase it would help us

Many earn big bucks for referring IS pros

That's right. In today's right

skills market, friends, relatives, hardressers and bartenders can collect big bucks for referring IS professionals to companies desperate to hire them.

Other new "show me the money" recruiting tackes include giving signing bonuste to college recruits and paying a commission to human resources employees for each IS professional they recruit. All of this adds to recruiting

All of this adds to recruiting costs, but it is still cheaper than paying a headhunter as much as 30% to 40% of a

new employee's
base salary.
Atlanta-based
NationsBank
Corp., for example,

struiters as much as \$1,000 for reeling in a senior-level IS professional. And there is no cap on how much a recruiter can eam in

bonus money.
Last week, NationsBank recruiter
Charlotte Pedersen
told attendees at
Computerword's
Technical Recruiting Conference in
Syn Amonic Tree

as, that she has 2 earned bonuses totaling as much as 25% of her base salary.

"It's the best recognition I've seen in a long time," ahe said. "We're trying to motivate recrusiters. If they want to burn the midnight oil and do deals, they can make a lot of money," said Bill York, senior vice president of management recruitions at the

Employees also can earn big money for IS referrals.

At Cargill, Inc. in Minneapolis, employees receive a \$10 gift certificate for each name they pass on to the dostpany. If the prospect is hired, the employee receives \$2,000, with no limit on the time it takes the company

to hire the person.

Increasingly, just about all IS
hiring — especially at the senior
level — involves poying somebody a bounts, raid Connie Pate,
an Irving, Texas-based director
of recruiting at Ernst & Young,
"One of the only ways senior IT people will even entertain an offer is through an agent. They don't answer ads. They want someone to negotiate for them," she said.

But recruiters said referral bonuses pay off in the long run. For most, referrals are the most effective recruiting tool, and recruiters pay between 5ayo and \$6,000 per referral, according to a recent Ernst & Young survey of best practices among leading companies.

At Brannon & Tully, Krutak said he hires more than 40% of IS employees through referrals.



But be advised: Paying referral bossues can backfire.

One recruiter at the conference told of an employee who took out his own display advertisement seeking IS professionals. After collecting more than 200 resumes, he presented them to the recruiter, who didn't say whether be paid out any bo-

A publishing company in the Southeast that recently tripled the bonus it pays for IS referrals was forced to offer the higher bonuses for referrals across all of its business departments.

"It because a tricky line because it looked like IS get preferential treatment," said a company recruiter. Overall, the secruiter added, "there seems to be a lot of jealousy because IS keeps doing things to address the shortage," "D

Translation Date my Gerhand at the to

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seeps to the correct to part the heart public of any entragers. The companion part higges, they transit up an improvement, and is the biggest energy to entransiting thinking. Due follows to the transition of the chart or provide by their to find the statum manew they provide the companion of the part of the Artificians, who provided of follows entransition of the artificials, who provided of follows entransition and are bittle through the follows.

"The employee the high, it's so early to pel load decimal the employee pet high, it's so early to pel load decimal to continue beying patience," admitted the bar appeals to the energy way after the (2.5 billion marger with talks in Shable, ill, one approved. He said 5 Com has

- Sab Wallers

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Hewlett-Packard and informs have set when standard in decision support performance - higher than the nearest competitors

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Technology brings honors

· Computerworld Smithsonian Awards pay tribute to innovators

By Stewart Deck

USUALITY THE four-story Coeinthian -marble pillars in the grand Juli at the Smithsonian's National Building Museum tower over everything else. Last week they faded into the background as industry luminaries and innovators stepped forward to accept the Ninth Annual Computerworld Smithsonian

Awards, for technology applications that illustrate 'a profound, positive and demonstrable impact on society', corered to categories from manufacturing to media and arts to science. Although multinational corporations and government organizations were well-represented as monimees, many of

the winners demonstrated the power technology brings to indi-

New York school tescher Susan Abdulezer, warmly recognized by the audience of 800 industry leaders as the first twotime award eccipient, expressed astonishment at receiving her prize in education and academa. "The Information Age has allowed individuals to change very fundamental problems themselves." Abdulezer said.

See winners, next page.] O

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2-Mark Stamp, proposition (Ford Ford New York 2-)
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COMPUTERWORLD SMITHSONIAN AWARDS

Information Technology tration calls per day. Leadership Awards

Price Waterhouse Award for Ufetime Achievement Andrew Grove, co-founder and CEO of Intel Corp.

MCI Award for Innovation Tim Berners-Lee, developer of the World Wide Web

Silicon Graphics/Cray Research Award for Breakthrough Science Dr. Frederick Hausbeer, chairman and founder of BioNumerik Pharmaceuticals, Inc.

for Global Integration Hasso Plattner, co-founder of SAP AG

NEC Leadership Award for Education Seymour Papert, author and educator

1997 Computerworld Smithsonian Award

Winners Business and Related Services:

(two winners)
The Johns Hopkins Health System and
The Johns Hopkins Medicine Center for Information Services for an electronic nations record system.

United Parcel Service of America, Inc. for its worldwide package-tracking system.

Education and Academia: Educator Susan Abdulesse for a CD-ROM presenting the alphabet in six learning modes for preschool children with a range of learning disabilities.

Environment, Energy and Agriculture: and Agriculture: The Peregrine Fund for The Harpy Eagle Conservation Program.

Finance, Insurance and Real Estate: Fingster Bank for a videoconferencing and automated system that lets loan appli cants collaborate face-to-face with actual

kan underwriters nment and Honorofit

husetts Department of Rever for two tax processing systems: the imaging of paper forms and a telefile system.

Buckman Laboratories, Inc. for an online knowledge-sharing network.

Media, Arts and Entertainment: Rock the Vote for a voice-response system able to process up to ao,ooo voter regis-

Nedicine: (two winners)

InterMountain Health Care for a combina-tion of data warehousing, project tracking and Internet technology used to link 24 hospitals and more than 70 clinics.

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This isn't your father's mainframe

► IBM rolls out next generation of air-cooled CMOS systems By Tim Owdlette

MAINFRANC SHOP'S may start to think expected Generation 4 (G4) machines, a they are managing nimble desktops, mere nine months after its G3 models hit given the speed with which IBM is up the streets. Gone are the days of five-year

grading large systems processors. IBM last week tolled out its longproduct life spans in the data center, IBM also doused users with a flood of related software and operating system upgrades in an effort to woo new sites to the S/sop platform.

The G4 series mainframes include aircooled CMOS processors that reach 61 MIPS, equal to that of IBM's water cooled mainframes. The current G3 line reaches a top rating of 45 MIPS for one processor.

CMOS systems offer huge savings in space and energy costs compared with the older lines, but until now haven't offered the same power as the older machines (CW, May 26) For example, Automatic Data Process-

ing, Inc. may see a 10% output increase by moving from G3 to G4 machines, said Renato Crocetti, corporate vice president for information technology at the Roseland. N.J., billing outsourcer.

BIG IRON BLOWOUT Ws 5/390 announce 8 G4 line of 63 MIPS

8 0S/390 Version 2

eration of Tivoli TME

Net.Connect. Net.Data and out for OS/390 rolls I Fynancine of the low-Hiprise 2000 line

For high-end users, IBM also tweaked the performance of its multiprocessor mainframes, which in the past decreased in relative power as chips were added. Now, the 10-way RY5 model will include special cooling hardware that chills the CMOS processors and pets them to the same power as older to way water-cooled

MATCHING THE HE

With the new internal cooling in the RY5. "IBM has at the highest end enabled equivalence to the old H5 processors," said John Young, an analyst at The Clipper Group, Inc. in Wellesley, Mass. To add spice to that power package

IBM in October will ship a new version of OS/300, its mainframe operating system, with 20 new features. Those include support for Tivoli Sys-

tem, Inc.'s TME to system management framework, a component broker tool kit for integrating object technology and a Lotus Development Corp. World Wide With ser

Linda Sanford, general manager at IBM's 5/490 division, said further 5/490 development would continue to ratchet up processer performance and streamline IBM's parallel sysplex clustering scheme. And the company will try to make OS/390 more attractive to application developers via object tools and lava integration

"We will remove all the complexity for application development on the \$/390. Sanford said

To ease migration from G1 models, users can move to the Ga platform as a Gy upgrade instead of buying completely new systems. D



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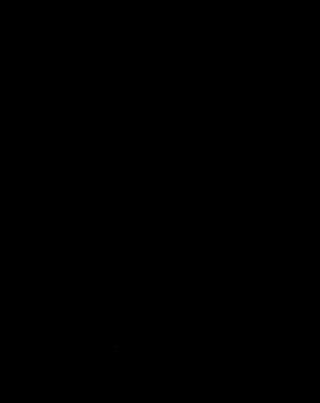
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This isn't your father's mainframe

▶ IBM rolls out next generation of air-cooled CMOS systems By Tim Osellette

MAINTRAME SHOPS may start to think they are managing namble desktops, mere nine months after its G3 models hit given the speed with which IBM is up-

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solutions? The fact is, MAXSTRAT Gen.5 storage servers are scalable to over 800 evaluates. That's ten times more capacity than other enclosures. Here's the fast part: a data transfer rate of 250 mezabytes per second. Which is 15 times faster than competing storage products. > Gen5 is serious centralized storage.

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Global Internet bank a no-go in Idaho

By Sharon Machin

"BO RITERIES" INTERNET commerce ran into Idaho consumer protection laws recently when the state demanded that an Internet bank stop seeking deposits from Idaho residents. The move is the latest salvo between companies that conduct electronic business and government agencies that seek to regulate them. Legal jurusduction questions have arisen elsewhere on the internet in cases relating to stock charging that only six

The Idaho Department of Pinance late at last month issued a cease-and-desir order against European Union Bank (www.cubank.ag), chartered in Antigua, k charging that only state or federally chartered institutions can lawfully solicit bank deposits within haho's borders.
"European Union Bank is not authorized, supervised or regulated by any

U.S. state or federal bank or financial institutions regulator." according to a statement from the Idaho Finance Department. Also, deposits aren't covered by federal insurance. No one from European Union Bank would comment on the

To my knowledge, it's the first state action of its kind, but not unexpected," said Kenneth Bass III, an altorney at Venable, Baerjer, Howard & Civiletti in Washington, "We have been waiting to see which jurisdictions would be moving to try to regulate [Internet commerce]."

"It's a clash between the global nature of the internet ... vs. legal and regulatory [systems] which are provincial," says atterney Barry Welss.

Banks with a physical presence in the 'U.S. must comply with federal and state regulations. But the Federal Reserve Board, which oversees commercial banks, has no rules governing institutions on the Internet unless they also have a U.S. office, according to Joseph R. Covne, assistant to the board.

"We're going to continue to see these types of cases come up." said Barry Weiss, a purtner at Gordon & Glickson PC, a law firm in Chicago, "It's a clash between the global nature of the Internet ... vs. legal and regulatory [systems] which are provincial."

Weiss said many companies setting up businesses on the Internet are trying to decide whether they should try to comply with myriad regional laws and regulations or simply launch their businesses and respond to local complaints as they arise. With case law relatively source on the subject, companies are making their decisions based largely on budget issues and their taste for risk,

Weiss said.

Some observers said the nature and popularity of the internet eventually will wear down the need for electronic business to conform to numerous local regulations. But others fear that a balkanized system of rules will govern amyone who seeks to conduct transactions on the

"I think in many areas you'll see federalization and globalization of rules," Weiss predicted. "But it's going to take a lot of time."

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offerings, taxation (see story, page 1)

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E HETWORK IS THE COMPLITED.



RE has depresent the At right storaged has been throughout the loss large and the depresent to represent redempts or represent medianets of the Minimpson, inc. in the Board dozen and other countries.

When a company is synonymous with the Web, it needs servers that are synonymous with unstoppable. Which explains why Netscape" Communications chooses 64-bit Diotra. AlphaServer" systems to help handle the 155 million hits its Web site receives daily. Ultra-reliable AlphaServers are also Netscape's primary backup The ((bhaSter's) tage, system-because netscape.com simply can't afford to be down. Sheer — muscle isn't the whole story, though.

May your content be hot.

Your graphics be cool.

And your servers be DIGITAL.

Internet Software, where AlphaServers run
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Diotrat, edge your own. Or sing the Webmaster's Lament: "Gee, I guess we should have gone with Diotrat."





Tax laws apply to 'net

s state will require them to collect sales taxes from customers in that steen State auditors also want to ex-

pand their multistate data-sharing agreements so they can catch online transactions in which sales taxes should have been collected but weren't.

"Even in cyberspace, there is no ducking the inevitable: The tax collector is coming."



said Gene Gavin Connecticut's tax

If online sales spread across 50 states - with 30,000 separate taxing iurisdictions —

would fall beavily on companies that don't have the software or staff for multistate tax compliance, experts

Business groups, such as the Interactive Services Association

in Silver Spring, Md., said they want uniform electronic tax rules for all states.

states) to tax it in an uniform and consistent way," said Walter Hellerstein, a law professor at the University of Georgia School of Law in Athens. "Having said that, you have to appreciate the fact that for two centuries we have lived with a federal

system where inconsistency, at least to some extent, is the price that we pay for our system." "I'm a believer in paying taxes ... but what I've seen so far is a rush to tax," said Robert Olson, president and founder of Pale Alto, Calif-based Virtual

wine and specialty foods on the In general, Internet shopping sites have to follow the same rules that traditional mail-order companies follow, said Robert

> Lands' End, Inc. Dodgeville. Under a rul-

ing by the U.S. Supreme Court. merchants must collect sales taxes if there is s "nexus" - s physical connection or between

the merchant and the state. For example, if a merchant has a store, factory or office in New York, customers

But what is a physical cotion for an Internet-based busidem in the state is enough to create a nexus, officials there have ruled

That means America Online. Inc. m Dulles, Va., and Compu-Serve, Inc. in Columbus, Ohio. are supposed to collect Connecticut's 6% sales tax from customers. The state expects to earn \$5 million in revenue this year from that ruling, which Amenca Online is fighting in court. state officials said

SERVER LOCATION COUNTS In Texas, tax officials recently decided that a World Wide Web page based on a server located in that state creates a nexus. "If software is downloaded from a server here in Texas, then it's the same as coming to Texas to pick up the software - even hough you may be out of state," said Lindey Osborne, a state tax

policy official. Some businesses may steen clear of states that aggressiv tax online transactions. "The conclusion I reached is we will try to stay out of Texas, from the standpoint of creating a server there," said Bill McKiernan president and CEO of Crbersource, Inc. in San Ione, Calif.,

which sells software via the 'net. California, mindful that businesses move to favorable tax climates, has taken a 180-degree turn away from the Texas ap-

California's Board of Equalization recently decided that having s Web page in the state doesn't create a nexus, making the state something of an Internet tax-free zone that hopes to sttract economic development

Experts said states eventually will try to tax Internet shoppers wherever the Internet comics provider or online service has a presence. For example, a flower

Online businesses are faced with these problems when a state decides to levy taxes on electronic commerce:

 The initial decisions to tax electronic commerce aren't the result of new state laws, but of reinterpretations of existing laws. These decisions

may be made behind closed doors. An online business may learn about the new tax the

same day an auditor arrives. An auditor can assess past-due taxes back several

A company can spend thousands of dollars fighting a state's action in court.

shop doing business on the AOL network would have to collect taxes wherever AOL has a modem or server. Bruce Reid, state and local tax director at Microsoft Corp. in

sue this way: "Does AOL's point of presence (in a state) give it nemus? And if it does does it then drag in everybody who is on their service? Industry groups said Reid's

question could take years of court battles to answer and could create lots of uncertainty

"It's not good

enough for the

courts to pick up

the pieces. The damage will have

already been

of the many "great uncertain-ties" of the online business frontier, he said. Redmond. Wash., framed the is-Indeed, most forecasters ore dict electronic commerce will grow from \$500 million this year to anywhere from \$70 billion to \$600 billion by 2000.

and CEO of Biztravel.com, Inc.

in New York, from setting up s

travel service on the Internet,

for example. Taxes are just one

But state tax audits can produce some headaches for online busi-

One firm being taxed in multiple states complained that many states require paper copies of electronic purchase or-

We can provide [s printout]. but because it's not on the fcomnyl letterhead, dated a certain pany] letterhead, care a standard date, it's not a legal copy," comined an information systems per in Texas who didn't

done, and the chilling effect could last for years," said Robert Levering, a senior vice president at the Direct Marketing Association in New

York A KPMG Peat Marwick sur vey last year revealed that 67% of financial executives found state sales tax laws "ambieu ous" in the online world. Half the sqs respondents said that would inhibit online commerce. But this year, companies are rushing into electronic com merce despite the murky tax sit-

kept John Williams, president

want to be identi-He called the paper require-ment "a leftover from the 1950s' and said it is an expensive one to

Alth lysts said taxes haven't been s significant barrier to electronic nmerce so far, the tax battle has had casualties among Inter-

net service providers on the front lines. James Walton, owner of an Internet service provider in Nashville, said the tax problems

created by Tennessee's ruling were too much for him to bear. He closed his business late last year and doesn't plan to open s new one. "It's hard to write a business plan when you don't know what you're facing." he said. C



there must pay the state's sales

In Connecticut, s "point of "Congress could ask lithe presence" such as an access mo-

uation, analysts said. Fear of the unknown has

"Everyone tells me

they know their way around

networks.

What makes you any different?

Building 50 CDMA
notioerks werkloode (& counting)
(Some up & running
in 3 months flat)

Built largest soner network—"196 Olympics

- '96 Olympics
(3,000 hours of broadcast
video, voice \$ data)

Optical networking leader-Enhancing fiber capacity (Bell Labs 1500+ optical networking patents)

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Computer Industry

DG tries for enterprise comeback

> Announces NUMA server in effort to get shops to notice them

By faikumar Vijayan

AFTER FASHIONING & quiet little comeback for itself in the past few quarters. Data General Corp. wants enterprise shops to

referare again. The Westboro, Mass-based npany Jast week launched an Intel-based Non-Uniform Mem

nry Access (NUMA) server that offers users relatively high-end Unix capabilities at aggressive Once numbered among the

midrange leaders, it will take more than just nifty technology and erest prices for DG to make ession in a market dom mated by the likes of Hewlett-Packard Co., Sun Microsystems, Inc. and IBM, analysts said.

"DG wants to be a Unix cometitor using hardware that has en driven up from the commodity market," said Rich Partridge, an analyst at D. H. Brown & Associates in Port Chester, N.Y.

"That's attractive to a portion of the Unix market looking for decent performance at low cost. But it is certainly not going to be destroying any of the markets" dominated by mainstream Unix vendors anytime soon, he said.

06 AVIION 20000 **NUMA** support

Up to 32 200-MHz Pentium Pros Cluster support for up to 128 processors

Up to 32G bytes of

Up to 100T bytes of

Starting price: \$70,000 for a quad

marks a nort of comine-out party for DG, which has spent the past two years focused on steadying a once badly listing business - the company has been in the red for four of the past five years. Since 1995, it also has had to contend with a wrenching shift from Motorola Inc. chips to Intel architecture. The thing with DG is that they made very sure they were

not getting ahead of themselves

guez, a systems administrator a Cigna Dental Health in Planta tion. Fla. "What's good about them is that they have managed to stay on the cutting edge, without being too much on the bleeding edge. DG's latest machines use

NUMA technology to let users be up to 32 of Intel's fastest Perstium Pro processors in a configuration capable of supporting up to 12G bytes of memory and up to 100T bytes nf storage.

NUMA technology lets ven-dors cost-effectively tie numerous processors together in configurations that extend well beyond other architectures such as symmetrical multiprocessing (SMP). That kind of scalability is required for things such as on

line transaction processing and database applications Because DG mainly uses modity components and motherboards from Intel to achieve that scalability, it hopes to deliver these systems at sig-

nificantly lower prices. A 32-pro cessor DG Avison 20000 wi AG bytes of memory will cost about \$690,000. Enterpriseclass SMP servers from vendors such as Sun start at more than St million but typically offer greater performance, Cl.

· No longer a quiet outsider

Baan strives for focus

terms and admit we don't do e crything? There was a study

from one of the Big Six firms

ies, maybe so% had SAP in

stallations. But if you look at

By Randy Weston PUTTEN, NETHERLANDS

The Baen Co. founder and CEO Jan Been last week set down with

that showed in the top 100 com-Computerworld at his compuny's arters in a small farming those plans, the installations village located about an hour out were less than 10% done, which side of Amsterdam. The remote means there is a big market still cale is fitting given that

Boan has been a guiet outsider in the client/server application race. But it has made great strides in recent years, landing larger and mer customers such as

he Boring Co. and Ford Motor Co., and catching the attention of Wall Street. hat follows are Bean's thoughts on some critical ses fixing the packaged ation industry. The role of ents

source planning (ERP) on technology: The word enterprise re-

source planning is not right. Why not ERB, enterprise resource back bone, which is what it is becoming today. It is more than a planning sys-tem. It is a backbone for enterprises. Every manufacturer is using components for the supply chain. But we las an enter

CEO and founder prise software supplier) ave to sell all of it.

le. In the next five years,

we will go with relational data-

ase technology because object

omented technology is not scal-able. On the other end, I would

like to have today the Web stuff

also in [Common Object Re-

quest Broker Architecturel, But

this is a paradox. How can you

handle these two technologies

together? This is what we have

The problem with the state of lient/server computing: Today, it is easy for me to My major competitor is not a build in C++ an object-oriented company in Germany - it's solution. I could have done it three years ago, but it was not

complexity. We have to kill complexity. It's a paradox in the business. Even if it seems the ERP players are great. They are able to make business flexit and client/server makes technology more flexible. But what do you achieve? More complexity. We increase source code, we increase everything.

'My major competitor is

not a company in Germany

- it's complexity. We have

to kill complexity. It's a

paradox in this business

-Jan Baan

The industry push toward ver-We don't want to be a copy of

to learn. Base is moving that SAP and go everywhere. We like to win in lines of business. SAP AC's saturation of the too Focusing is most effective for us. Why should we go to banking, to government, to insurance, to everyone? We can go to the whole supply chain in our

at any point," said Roger Rodri-Start-up Novonyx dives in to Internet arena By Laura Di Dio ing NetWare/IntranetWare soft-USTnust Bank Corp. in Cam

NOVONYX, INC., the privately held start-up jointly funded by Novell, Inc. and Netscape Com munications Corp., has ambitious plans to ship its first intra net/Internet products by fall. Novembre strategy is simple and straightforward: Get to mar-ket quickly with products that combine Netscape's World Wide

Web servers running as services on top of Novell's IntranctWare and use Novell Directory Services (NDS) and the Lightweight Directory Access Protocol Marketing the new products would be a boon for Novell's in-

stalled base of 60 million Net-Ware nodes worldwide - about a third of which currently use NDS - because it would preserve their investment in exist-

Thus far, no other husinesses

offer a similar competing offering that combines and integrates full-blown directory services with Web servers. Nonetheless, Novell is still percented as trailing Microsoft and Sun Microsystems, Inc. in the Internet arena

Novonya will ship its two initial products this fall: Netscape Enterprise Server 3.0, a highend Web server, and Netscape FastTrack Server bundled into Intranet Ware 4. tt

BEING CARETIN Users reacted with cautious op-

Matt Rice, vice president and senior network manager of information systems services at bridge, Mass., said Netscap Web servers integrated with IntranetWare and NDS could preserve his investment in existing networks and reduce manage

ment tasks and training time Right now. I have to add ister my Web servers and my NetWare file servers as two sepo rate entities. The Novonyx software will save me a minimum of to hours of management

time each week," Rice said. Other users, such as Len Steinbach, director of information technology at the Solomon Guggenheim Museum in New expressed reserva

way, step by step. about Novonyx's chances for success given the spotty track We have to respect that a lot of record of other recent start-ups SAP installations are already that also had the backing of top-

there. Why should we not reect that and link our two sys-

How long will it take before you with their credit

Imagine if it

The former press beating would be conceased. The ACO county instruction, the first under conditional way for the beginning. Suddenly you're able to show conditional information, consistency, couplings and business partners. You besiness becomes more efficient and comparison. So what alone is take to begin A partner who truly understands the import networking can be consistent to the control of the control of

your customers finally trust cards over the Internet?

happened next month. }

Or shirt our Web size at warm class own

Sim fast II There's a reason we're attracted to network computers, and it's not just cost of ownership.

We're swamped by information overload, hardware chum and software featuritis, so we honey for any thing that offers that rare attribute called simplicity. It's lefined as "freedom from complexity." We warn for intion systems that are low-maintenance, co bie, streamlined and filtered.

Evidence of this quest for simplicity is everywhere,



from the popularity of Dum mirs books and flat-rate pricing to this week's Lead ship Series article on the neurs of too much techlogy. People are tired of itiple messaging sysms and rapid-fire soft-

are upgrades. Some are sticking with older machines and older software because they work just fine.

der the World Wide Web browser. It's the inter face du jour because it has four basic actions: click on blue things, go back, go forward and keep bookmarks so you can get there again. No training required. The bulky new "features" in the 4-0 releases only increase the risk of incompatibilities, system crashes and higher

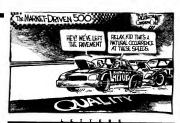
training costs This isn't just technostalgis or a distribe against what Nicholas Negroponte calls "digital obesity." The upbest message is that the search for simplicity is a golden opportunity for IS managers.

Walk into your business units and ask how you can simplify users' work. The answer may be as mundane as writing a macro that cuts five steps from an everyday task. It may mean consolidating message systems or deploying applets instead of Mostware.

This isn't dumbing down. By making simplicity the IS standard, you give users "freedom from complexity" so they can focus on truly productive work. And you'll he a hero to grateful users.

mitch Betts.

itch Betts, Assistant news editor Internet: mitch betts@ov.com



Re-engineering would be

aided by motivated workers relevant^y [CW. April 21]. David of re-engineering as the result of not taking people into consider

But how should people be taken into consideration in business process re-engineering? By now it should be obvious that where work is the manufation of information, high motivation of the workers is essential. Surely part of the answer is

to re-engineer jobs so there are opportunities to make decisions that count, involve more difficult tasks - not more work - and provide more responsibility.

> Shillock Connelling Protland, Ore.

Get better pay and buy your own pinball machine

KILLER PAY' Life my way? Yay! As a member of Generation X. I take exception to your May 5 Page 1 article. "All work, no play? Gen X-ers. No way," Instead of imploring comorate America to follow the example of a few who gree their young professionals pinh machines in the name of fun at the expense of offering them competi tise salaries the article chould have explained that what they're really doing is substituting bogus benefits for real ones to cut costs on their No. 1 expenditure emplower services

The story masses the point completely with the highlight on Pete Fazzo an example of this Gen-X trend toward accepting low wages and long hours near a pin-

hall machine

By taking a job that requires all his time in exchange for little more than continued opportunity to hang around with the same people he sees all day, every day, Fazio deprives himself of the time and compensation he deserves to enjoy life beyond work

As a consultant and a young professional, I work hard to make sure



ball machine.

that my client gets quality service. At the end of the day, however. I return to being a young whose

life extends beyond the office I make sure my compensation is competitive because I enjoy the choices it affords me in that life. Fazio, and the others of my genera

tion who follow him, take heed. Corporate culture is a myth that expires as soon as you go home. If you leave your current position for one that is well-compensated, you can buy your own pin-

Jason Couckman

Durham, N.C. Intel competes unfairly with proprietary Pentium II

N YOUR article "Pentium II delivers speed to desktop [CW. May 5], you quote Linley Gwennap, an analyst at Microdesign Resources, saving the new modular design of the Pentium II shouldn't hurt end users ... be cause it will let vendors bring products to market faster."

This may be true but I would also add that this modular design - the slot 1/sungle-edge cartridge is owned by intel and is not an industry standard, unlike the socket 7 of the current Pentium mot erboards. This does not promote equal competition from other vendors such as AMD and Cyrix and therefore does not force Intel to play on a fair and competitive field.

Chris Duki Dearborn Heights, Mich. cdukl@dkol.com

Requiring permission to link Web sites would be operous

REGARDING YOUR MANY case f 'Suits attack Web fundamen tals," CW: May 5]: A lot of people seem to be missing the point of links. The Web was designed to be a condust for the easy dissernina

tion of scientific information Scholarly literature has always used references to point readers to additional information on the subject. No one asks for permission to use a particular reference The same rationale should hold

for the Web. Must Computerworld seek permission from the site owner every time it cites a Web address in a story? It's the same concept. Requiring permission to provide links would be onerous

Edward F. Martz North Kinestown R.I.

Computerworld welcomes comments from its readers Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number

COMPUTERWORLD

· Leadership Serie

Fatal Attraction:

The Dangers of Ton Much Technolo



Is the road to hell paved by power users?

History has shown that great high-tech companies ruin themselves by offering too much technology in order to please high-end customers.

Great IT organizations can make the same mistake, warns Clayton Christensen, author of the new book *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail.*

Here's why best practices such as listening to your customers can lead to

disaster.

Have you ever wondered why

stambled badly?

great companies bit the skids? Why anies you once admired for setute, aggressive management, Sears had energous leads in the credit eticipating customer needs and consistantly having the right product at card business and in catalog retailing,

For example, Sears, Roebuck & Co. was once admired as one of the best naged companies in the world; in the mid-1960s most observers and iars of management held the exec others of Sears in the same high regard ples: They once salled atop their indus that most people today reserve for management of companies like Waltries but then fell on hard times

pary that missed most of the bureaucracy, short isvests important waves of innovation in its industry: Discount retailing and been rs were new retailing formats that sany good companies, however, is stripped Sears of its core franchises.

but it let those waves pass it by, too. the right time have subsequently gies that preceived the highest What is most distarting is that Seen missed those crucial waves of innovareturns; and weeded out unprefitab ideas targeted at minor markets. It is tion during the very years when everythese practices — which are at the one regarded the company as one of the best-managed firms in the world! core of what we know as good man adament - that can lead great com-Digital Equipment Corp., Xorex, IBM nanies toward trouble. Those same and Computervision are similar exam

Of course, companies stamble for

zons and just plain bad luck. An important factor behind the fall of

that they did everything right! Then tened closely to their customers; sted appreciately in the technolo

ions can also hurt IS organiza tions, by pushing them to invest in too

Consider what happened

Mart. Yet Sears today is regarded as a

over and over again in the disk drive industry. where the size of the disks has shrunk from 14 to 8, 5,25, 3,5, 2.5 and now 1.8 inches in diameter. A different company entered the industry and rose to become its leader in each of these product generations: No firm successfully staved atop the industry for longer than a single of the end for those firms. In each case, the smaller, next-

generation drive was designed in

the firms that led the industry.

by engineers who felt that "there

had to he a market out there

ity than their larger predecessors, however, they couldn't be sold to the OEM computer makers that paid the disk drive companies' bills. These customers want ed faster, higher-capacity disk drives, not smaller, lower-performance ones.

As a consequence, the marketing and financial powers in the disk drive companies persuaded management to cancel the small-drive efforts. Listeoing to the customer turned out to be the beginning

In each of these generations, stretched the performance of many of the engineers who had designed the little drives subsequently left their employers and founded companies to make and sell smaller, cheaper drives.

These start-up companies ini-

rially positioned themselves at the low-end of the market. None of the leading makers of larger drives followed the start-ups down-market because their customers couldn't use the drives and because the markets for them were so small that they

much bleeding-edge techn

appeared to be unprofitable. The start-ups saw the world

differently however. They structured themselves to make money at the low volumes and low margins per unit that characterized their emerging markets.

their smaller drives with each new model, until they could satisfy the capacity required in higher-end markets. In the process, they drove the prior leaders from those markets.

Once established, they





If the net is all about breaking down walls, how do you make sure a few still remain! The Internet promises accessibility That is also its threat. But with HP's Praesidium enterprise security solutions like VirtualVault, exportable encryption and the latest smartcard technology, only the people you designate have access to your information. Our security solutions span any environment. And secure any enterprise. Come on in and see at www.hp.com/go/security Capitalize on chaos:

The words in this story could be

changed to describe the same phenomena in the computer industry itself. It was initially dominated by mainframe manufacturers such as IBM, Control Data Corp., Remington Rand and Burroughs Corp. None of these companies led in developing the minicomputer. The minicomputer industry was built by a group of entrant firms - Digital, Data General Corp., Prime Computer, Inc., Nixdorf AG, Hewlett-Packard Co. and Wang

then from the mainstream, of the mainframe makers' markers None of the minicomputer makers, however, led in establishing the PC market. Again, it was oot because PCs were technologically difficult. It was because their performance was so limited that minicomputer makers could not sell PCs to their customers. It was far more active resources on serving its

profitable to develop next-gencration minicomputets that could be sold at more attractive margins up-market. Hence, a different set of companies -Apple Computer, Inc., Tandy Corp. and a standalone unit of IBM - built the PC industry. And for the same reasons, it was Zenith Data Systems, Toshiba Corp., Compaq Computer Corp. and Sharp Corp. that pioneered the portable computer market, rather than the desktop

The same mechanism lies behind the decline of some Laboratories, Inc. - which subprominent software companies as sequently moved aggressively upwell. Computervision, for exammarket and began stealing cusple, helped pioneer the computtomets from the low end, and er-aided design (CAD) market. As it strove to introduce ever higher-performance products, an entrant. AutoDesk, Inc., slipped in at the very bottom of the market. Its product, AutoCad, was cheap and could run on the IBM PC, bur it was so limited in its functionality that no serious pro-

fessional could use it. Comput-

ervision chose to focus its innov-

computer makers.

customers better, improving speed and graphics, and on stealing share from its direct competitors

At the bottom of the market. AutoDesk discovered an entirely different group of less sophisticated customers, who previously had not been able to justify purchasing a higher-cost, highperformance CAD system. As it cultivated these new applications, the company improved the capabilities of AutoCad with each release, moving relentlessly up-market. Within a few years, many designers who previously had occded expensive Computervisioo systems found thar, while AutoCad was still not nearly as good as the Comput-

simplet and less expensive. Computervision's response to this attack from below was to continue moving up-market (as did the leading computer and disk drive companies), ceding much of its original customer base to a cheap, simple product that had not warranted its attention just a few years before.

ervision system, it was good

enough to do the job and was

What lessons do

the experiences

of high-rech companies have for

■ Tee much te

Providing too much technology - systems that offer functions users don't really want but lack

qualities they find important can frustrate executives and open the door to opportunistic outsourcers."

New software that pushes the

Customer Intuit-ion

By watching average customers, Intuit has stayed on top

Strategic-minded technology

agers can best sense future or needs not by distanting to what leading customers say they road, but by watching how low-and and mainstream customers acts use their product, intelt, the lead ing maker of personal and smallre, looks at its cu de les thès way. intuit does this by sending its et researchers to computer es their

are and then ask the curniers as they leave the store If they seight literally follow thom no to observe them installing and using the software for the first tion. The researchers return on subsequent occasions to watch

on use the product. This helps intuit's staff see firsthand the content in which their

software is purchased and used the functions and features of the product that are actually used, and the problems that are enco tered. This has led them to come up with new ideas for how they can make their flagship personal finance product, Quicken, ske and more convenient to use. This ectice also led to the idea for Quickbooks, which is now the load ing small-business accounting soft-

ware package. By watching Quicken cost action, intuit has chosen to focus primarily on improved come use, rather than improved functi ality. Intuit's now products typically sile) the changing needs of its tream customers, rather than raheet them. Its oustomers se a result are highly loyel; are not overserved and overcharged; and are not rise for the picking by low-and com petitors which so frequently have upoet the lauders in technology



functionality envelope is usualmore likely to turn to an outside ly risky business. It is frequentcompany which promises a simly buggy, expensive and incom-parible with existing systems. An pler, more convenient and less expensive solution.

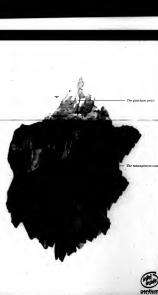
IS organization's reputation can be harmed when new technolo-II Listen to your average user and gy malfunctions or fails to delivbe wary of your power users. er value. This risk will only The most sophisticated or vocal increase as electronic commerce IT users in the company can takes off, and IS becomes more cause IS organizations to invest

involved in supporting corpotoo much of their resources in rate customers as well as interadding new functions to systems while the average employee's nal customers. need for greater reliability and Software failures often cause subsequently greater convecorporate executives to give up on their in-house IT departnience remain unaddressed. In fact, investments in cutting-edge ments and turn to outsourcers technology often reduce the very for information services. When reliability and convenience that executives lose faith in their own IS organizations, they are much the "silent majority" of users age user.

sorely need.

Technology driven IS depart-ments are particularly likely to make this mistake. Pushed by overshooting suppliers and encouraged by some vocal, activist, functionality-hungry users, they pass up opportuni ties to provide more of the reli ability and convenience that

mainstream users crave. IS organizations should watch how mainstream users use systems and products, to see what they need and value (see "Customer Intuit-ion" above). The needs of power users should be considered, but they should not come at the expense of the aver-





When choosing a PC for your company, remember the lesson of the Titanic. High PC management

> costs aren't just bad in themselves; they also 'translate into lost productivity. Worse, they suggest a PC environment barely

under control But at HP, we don't just make

intel* Pentium* processor-based PCs that you can manage.

We make PCs that help you manage. Between our hardwise and software features such as TopTOOLS and OpenView, we offer a host of non-proprietars, DMI-standards-based management solutions. You can remotely upgrade the BIOS of multiple PCs, monitor every PC in your networktroubleshoot problems and, in general, fitalizing costs.

The Iceberg will still be out there, of course. But it won't be one you'll founder on, new Apcomporeceronomercial

Better products, battar pradactivity.



■ Don't let vendors drag you up-

Buyers and managers of IT need to look carefully at the performance improvement which their IT users can absorb, versus how much performance improvement their suppliers are offering now and are planning to offer in the future. Suppliers whose products and services squarely address an organization's IT needs today often attempt to

with them, convincing them to buy far more "technology" than they need. Users of the massive, enor-

mously complex enterprise resource planning (ERP) systems currently in vogue, such as those offcred by SAP AG or The Baan Co., should watch their vendors carefully. They need to make sure these vandors don't follow the same path as the disk drive and minicomputer manufacturcarry their customers un-market ers.

ERP systems remind me of the time three decades ago, when Toyota and General Motors were each faced with the extraordinarily complex problem of scheduling production in their factories. General Motors (and thousands of American manufacturers like it) invested hundreds of millions of dollars in materials requirements planning systems. They purchased extraordinarily complex solutions to very complex problems. They

What Do Users Want?

What happens

- 1. Functionality
- 2. Reliability 3. Convenience
- 4. Cost



when competing products both offer more functi than the market demands?

re do contomera decida which in my research, it appears t

od functionality has been oct and vender that is meet es that follow a strategy o ntial price press

some dynamic of ove A needs can occur in the roll gh, the basis of cor a actain to con

ot convenient to deal with sis, computitors begin to

is, over 80% of the greath in oly all of the growth in the

ry of improvement in co ds as well. Typically at this mora will choose the This pattern of co

found, however, that these highperformance solutions were not enient to use, and hence spir our unreliable schedules based

on ermneous data. Compute Toyota, on the other hand, decided that rather than purchase a complex solution to a formance improvements that complex problem, it would simplify the problem. Its now famous production system, scheduled through very simple. reliable and convenient kanban cards, which are tags that signal to workers that more parts need to be manufactured, proved to be a much better course of

It's possible that ERP systems vendors will be tempted to add more functionality to their sysrems. Yet the companies that come out on top may be those powerful technology. that figure out how to simplify the enterprise information problem through organization and How can process design, as Toyota did.

m Don't underestimate the attraction of cheaper, less functional

Minicomputers, PCs, CAD software: Technology history bas many examples of cheaper, less functional technologies that found a market, took root and went up-market as they improved. The same dynamic may be happening now, judging by the enormous interest in lowcost network computers and in Java

Both technologies are criti-cized for not offering the functionality of current technology. Still, IT leaders should remember history and keep their minds and their eyes open for "smaller, cheaper, simpler" technology that can adequately meet the needs of many users.

W Hire and premote people who value appropriate technology more than the latest bells and

technology. They are usually interested in the power and per-

new products have to offer. But when a "technology for technology's sake" mentality takes root in an IS organization, the group can fail to meet or even respect user needs. IS managers need to find, hire, reward and primote people who find satisfaction in creating inexpensive, reliable and adequately functional systems. They should cultivate a culture that finds value and fulfillment in creating appropriate technology, not just

strategists in technologyintensive industries avoid this

cycle of pursuing up-market pmfitability, followed by displacement by competitors who enter their industries with cheap, simple products targeted at unpmfitable customers? As they analyze their market, they should compare the rate of improvement in product func-

tionality custoroers are actually using, with the rate of improvement technologists are actually forging. Typically, managers compare the performance and price of their newest products and services with those of their most direct competitors. They

solicit inputs from lead customers, who often articulate needs at the high end of the markets they serve.

Too often in this race up-mar ket, managers can lose sight of what improvements in func-tionality their low-end, and then their mainstream, customers actually need or can absorb. In other words, they overshoot the performance needs of their core market - making them vulnerable to an attack by a disruptive competitor from below

Overshooting the perfor-mance needs of their core market has been at the root of the failure of many companies. This generally occurs because those providing the technology - on

the supplier and the user side - are often caught listening to their leading, most demanding customers. Hence, they often miss important changes, its which simpler, more reliable and more convenient solutions are what their markets and users really need. When obeying the management commandment that we should listen to our customers, therefore, it is important that while managers seek to be led by them, they not be misled as well.

ABOUT THE AUTHOR:



Clayson M. Christensen is an Associate Profe the Harvard Business School in Boston. His book, The Innevator's Dilenous: When New Technologies Cause Great Firms to Finil, has been recently released by the Harvard Business School Press. His E-mail address is othersensen@hbs.edu.

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HEWLETT*

Upgrade fever burns out user

Brett Arquette

an everyone just stop writing software for a while? You're making my job miserable. Even if "zero administration" arrived tomorrow. I wouldn't be able to keep up with the upgrades, service

packs, software bugs and interoperability problems. Let me give you an example.

We're migrating from Digital's All-In-t to Microsoft's Exchange. We started out by choosing to install on our servers Winws NT 3.51 over

NT 4.0, because the latter had just come out and was ugly. But before could even install Exchange, there were

reports that the service packs for Windows NT 4.0 made the product stable. So we decided to upde our barely used NT 3.51 license to

After loading NT 4.0 on our six servers, we were ready to install Exchange Server 4.0. So we started loading Exchange Chent 4.0 on our users' maEven before we finished rolling out Exchange clients. ve started upgrading and nstalling Outlook.

chines. We quickly ran into problems that required more service packs, this time for Eachange. One of the big problems that the

service packs didn't solve was how to rere individual folders or files for users who run Exchange. You can back up Exchange's database and restore the whole thing if something blows.

But if you want to restore single folders files, you must have a spare stand-

one server with enough disk space to hold the entire database.

After you restore the database, you law to create a new user account, create a new off-line folder, load the off-line folder onto the user's PC and synchro-

nize to the live Exchange system. Yeah ... right! So much for restoring files and folders. But wait! One of our administrators

came back from a Microsoft dog-and-pony show and said Outlook could automatically synchronize the off-line folder any time the user closed the application - ensuring that a copy of

everything on the user's mailbox on the server would be saved on the user's PC. If the user ever shut down the application, that is. The administrator thought Outlook was

nuch "cooler looking," too. So even before we finished rolling out our 300 Exchange clients, we started uping user licenses to Outlook and began installations. Now I hear Microsoft plans to merge Outlook and Excha o what does that mean to me? What

does it mean to my licenses? It probably means upgrading my client

licenses for the third time in less than a year and reinstalling the clients on 100

THE GOOD OLD DAYS

There was something to be said about the old mainframe systems. You upgraded one machine every year or so (if it needed itt. If a user's terminal died, it wasn't a problem. You just threw a new one in out of him, and he was set for another three years. Licenses were a breeze Hardware was no problem, and backup

and restorations were simple and reli-Now I'm looking at to pieces of soft ware on each client, all of which seem to get upgraded three times per year. Each application requires a license for each version and upgrade. I face the same soft-ware compatibility problems I faced on the mainframe, times 300.

So would everyone please just stop writing software and simply fix the old

Old stuff? Exchange is only two years old, and I'm calling it old stuff. Just stop. D

Arquette is manager of IS at the 9th Julicial Circuit Court in Orlando, Fla. His E-mail address is horo@ice.net.

Has the Java crusade been infiltrated? John Gantz

wo years ago. I went on record saving there was a 40% chance that Java was a hoax. I was wrong. It's worse than that. Java has become a crusade, but sometimes I think the crusaders are marching in all directions at once.

lava - once s software language developed by a hardware company — now is a language, an array of development tools, a virtual machine, an operating system, a platform, a coffee-oriented naming convention, a must-support buzzword for vendors, and software in all varieties and flavors from all kinds of vendors

What got me thinking about this was an ad I heard recently on drive-time AM radio. The ad was done, quite creatively,

The company in the story thought Java would protect its secret data. But then Dick told Jane that the company didn't have 100% Pure Isva. And that was bad. "Rad had had."

I guess all Javas are equal, but some are more equal than others

The original premise of Java, as we know, was to do something about Micro-

soft. The public relations wraparound was that Java would be platform-independent, so developers could write one appli cation (in Java) and run it on any system (with a lava Virtual Machine). What's more, there was a good chance

it would be ubiquitous. The crusade's Holy Grail.

NITY UNLIKELY

The problem I've had buying in to the Java promise (and the genesis of my boax quip) lies in the idea that there would ever be a single Java. Why wouldn't different vendors do what they did to Unix and make variants

that support their own approaches to the mar-

The fact that we need 100% Pure Java

to protect our secret data means there ust be a lot of impure stuff out there. My other problem with Java relates to applets and JavaBenns — in fact, to the very concept of software components.

The basic idea is good, but who's going to catalog, maintain, test and integrate all the components out there?

Years ago, I studied the reusable soft-ware market and found it nonexistent. It was ensier and quicker to build programs from scratch than from odd-shaped bits and pieces of other programs that all had

The Java crusade got its mitial mo turn as a reaction to beather Microsoft. Now it's marching under its own force. Vendor devel-

opment organions are pouring money into Java-based development tools and ar that along

100% Pure Java will become as hard to find as a unicorn.

So I have a prediction. As the Java crusade fans out - International Data Corp. forecasts almost 1 million programmers will be Java proficient by 2000 - 1 pre dict the flavors of lava will prolife 100% Purerlana will become as hard to find as a unicom and the business of enterprise computing will continue to re-quire daily stitching together of nearly incompatible parts.

By the time Java is ubiquitous, it won't be uniform. Microsoft alone can make that prediction come true. For corporate developers, the questi

is how much and how fast to invest in Java. Java skills will increase the marketability of programmers, but will they help much in developing and supporting critical business applications?

Or is lava a distraction that sucks pro-

gramming talent from more important

The crusaders, caught up in their own drumbeats and battle cries, probably don't have a clue. I

Gantz is senior vice president at Interna-tional Data Corp. in Framingham, Mass. His Internet address is grantz@sdcressarch.

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Telecom reform stays on track

DAVID MOSCHELLA

HETHER OR NOT AT&T decides to make its rumored \$50 billion bid for SBC Communications, it has succeeded in raising the larger question of just how well the overall process of telecommunications reform is working

Although it's fashionable to bash the FCC and the Telecommunications Act of 1996, critics substantially underestimate the complexity of the reform challenge and the general rightness of the present course. History will show that, in this area, the Clinton administration has done very well indeed, especially when compared with other major nations,

ost of the carping has to do with how laws that were supposed to spur new competition have thus far resulted most ly in megamergers. This view is correct but shortsighted. Although the overall IT industry might feel better if — like Microsoft - the telephone companies pumped more money into cable television and wireless local loop alternatives. Major restructuring of the telecommunications players is also required.

Keep in mind that today's global telecommunications players weren't created by market forces. The U.S. Department of Justice imposed our highly unnatural local/long-distance divide, while govern ments around the world insisted on their national champions

New 11 S telecommunications comunies are being asked to create a rational competitive structure out of their fundamentally noncompetitive origins, all while keeping their shareholders happy It's simply unrealistic to demand that they do this in precisely the manner that competitive purists would prefer. The sit-uation is inherently messy.

Indeed, historians will look back on elecommunications reform as one of this era's most fascinating case studies. A stodgy, semimonopolistic and heavily politicized industry is being simultaneously digitized, deregulated, restructured and lized. Mastering this trillion-dollar Rubik's Cube makes forecasting in the computer industry seem simple evertheless, the most probable result

is also the most desirable one. Telecomications industry competition is evolving toward a small number of endto-end, global service providers. Certain ly, the British Telecom/MCI deal should be viewed that way. Also, as the newly combined Bell Atlantic/Nynex and SBC/PacTel entities begin to work with global alliances such as Concert, Unisource and Global One, they too will help move the industry toward an end-to-end service structure.

In contrast, an AT&T takeover of SBC

Moschella is smaler vice president of research at Computerworld, Inc. His Internet address is david_moschellastrou.com. would, at least in spirit, damage the cornerstone of last year's telecommunic tions law, which forbids the resional

largely negative industry has been appropriate, even reassuring. Once again, reorm instincts are on target.

So my advice to the critics is to back off. Although telecommunications re-

Bells from getting into the

long-distance market until meaningful local come tion is in place. Here, the

prising turns and require a decade or more, it's fundamentally on track. As long as de facto local monopoli exist, government oversi

is required. We should consider ourselves lucky that, contrary to what you often hear, our political system has proved up to this most daunting of challenges.

- rmanos: Trend Products Are Faster Than McAles's
- In Usability: Trend Products Are Simpler To Install And Menage
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Corporate Strategies

Briefs Bookseller site weds Web to legacy systems

SOMETHING OLD. Something new, something marked down, something from the best-seller

Noble, Inc. deliver some new capabili-

Wide Web The New York-based retailer is heavily leveraging the technology and expertise it uses in many of its 439 superstores na tionwide to quickly get going in a business in which upstart

largest book retailer, last mon set up an online subsidiary called BarnesandNoble.com to

ding personalized book recommenda tions based on a

We wanted to create a totally

sting tech-Most of the the sae gs such as ther informa

Noble's Unix

use by its bookstores Much of the same informs

able on the Web. And Barnes & Noble is porting to its Web site some features, such as author and book title searches, that

were developed for in-store use, and others, such as order processing services, that were developed for a merchan-**College gets**

help, students

learn network

To handle some of the hard rare scalability, reliability and tion has now been made avail

fault-talerance requirements for a 24-hour site, the company de cided to use what it calls a "modular distributed approach to developing the platform.

Instead of relying on a few large servers to power its entire Bookseller, page 4

egic planning benefits from regular network performance checks. With a limited [full-time net

working staff, we just don't have the resources to be poring over performance data and look ing in a more proactive way for potential problems," said }c Charles, director of informa

Students, on the other has ally have both the tir and the incentive. Identificat and their

lum, so tracking down probl dents also tap in to the system to ther statistics for special re-

A marriage of Unix and Windows NT technologies is help ing bookselling giant Barnes &

zon.com has been grabbing much of the attention resell books on the Web.

comes almost two years after Amazon.com's launch, gives

user's peofile; online, live audi toriums with authors; book groups; book reviews; and bulle

new experience in terms of purchasing books online," said John Kristie, vice president of Internet services at Barnesand Noble.com in New York, "But it

Field service application helps utility to compete

NEWARK, N.J.

AS DEREGULATION in the gas and electric power industries forward-looking draws near. utilities such as Public Service Flortric & Gas Co. (PSF&G) are using information technology to differentiate their customer service capabilities from the com-

At PSE&G. which serves more than a million customers in Northern New Jersey, the fo-

cus is on a field service system that gives repair staff fast information about customers' service

ANAGERS' MINDS

changes. The company n guard against new competit seeking to repair the gas appli ances in a franchise area it has tightly controlled. And PSE&G can find new opportunities by repairing electrical appliances. from water heaters to kitchen PSE&G officials recogni that the company would need new systems to help it differen

The company's project com against the backdrop of broad

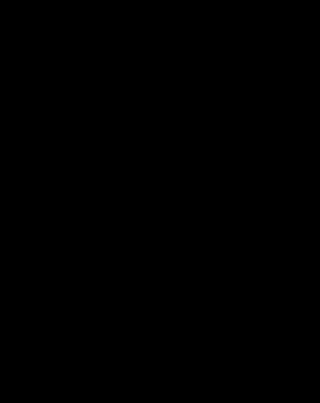
tiate customer service in the ap ince repair business. But b Service ann. nace 42



By Julie King

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Corporate Strategies

log/MCI venture

MANAGERS' MINDS

Of the managers surveyed:

use less then half eir brainpower on

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who make decisions hoose their boss's evorite alternative

e: 641 supervisors and agers across all industries

Briefs Bookseller site weds Web to legacy systems

By faskumar Visayan

SOMETHING OLD, something new something marked down something from the best-seller

A marriage of Unix and Windows NT technologies is help ing bookselling giant Barnes & Noble, Inc. deliver some new capabilines we the World Wide Web

By Thomas Hoffman

AS DEREGULATION IN the gas

and electric power industries

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utilities such as Public Service

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cus is on a field service system

that gives repair staff fast infor-

NEWARK, N.J.

petition

The New York-based retailer is heavily leveraging the techpology and expertise it uses in many of its 439 superstores nationwide to quickly get going in a business in which upstart Amazon.com has been grabbing much of the attention re-

called BarnesandNoble.com to seli books on the Web. The company's site, which comes almost two years after Amazon.com's launch, gives customers several features, in cluding personalized

tions based on a user's profile; online, live auditoriums with authors; book groups; book reviews; and bulle tin boards.
We wanted to create a totally

Field service application

helps utility to compete

new experience in terms of pur chasing books online," said John Kristie, vice president of Internet services at Barnesand-Noble.com in New York. "But it

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tiate customer service in the ap-

Service app, page 42

pliance repair business. But b

book recommenda

largest book retailer, last month tunt for us to set up an online subsidiary leverage our existing tech nologies and knowledge

doing so. Most of the database un formation for the site things such as title and author informs tion, for example

on Barnes & Noble's Their SCIVETS

use by its bookstores Much of the same informa tion has now been made avail-

able on the Web. And Barnes & Noble is porting to its Web site some features, such as author and book title searches, that

were developed for in-store use- and others, such as order processing services, that were developed for a merchan-

30% 17

BarnesandNoble.com

The site is "a totally new experience in term of purchasing books online," says Barneson ble.com's John Kristie disang data warehouse

To handle some of the hard ware scalability reliability and fault-tolerance requirements for a 24-hour site, the company decided to use what it calls is "modular distributed approach to developing the platform. Instead of relying on a few

large servers to power its entir Bookseller, page 42

College gets help, students learn network

By Julia King

STROSHT LABOR may be cheap, but technology managers at California State University at Harward have figured out a way to get it absolutely free. In exchange for analyzing

data from the campus' 2,000 node Ethernet network, stu dunts in the school's new tele communications program receive hands-on experience with state of the art network management tools.

The university, meanwhile, saves tens of thousands of dollars in employee salary and training costs. It also reaps key

tratees: planning benefits from regular network performance

'With a limited (full-time net working! staff, we just don't have the resources to be poring over performance data and look ing in a more proactive way for potential problems," said John Charles, director of information

bottlenecks

and their

part of their

search projects.

Internet

and computing services. Students, on the other hand usually have both the time and the incentive. Identification of network

Students' free lat helas the school and their orades

and client/ server systems course curri lum, so tracking down problems can belp boost their grades. Stu dents also tan in to the system to gather statistics for special re-

Celloge, page 42



College monitors network as students gain experience

Also, Charles plans to award an as-vet cified prize each academic quarter to the student who makes the most useful recommendations for improving net-

Students use the Internet to access campus network data, which is generated and archived for the university by Inter-

national Network Services (INS), a third-party network vices provider in Sunnyvale Calif Vital data is stored on an

ert-based server, which students can access via any er. The cost of the service, which the university has been using since No-vember, is about \$20,000 annually, Charles said. "One of the greatest ad vantages of this service is that you can access it re-

and share it with stu-

dents," said Alex Bordetsky.

used to implement several switched Ethernet hubs dur-

manager."

ing the next two years. Without their help and the INS service, the project would take much longer, said Kent McKinney, director of infor-"One reason we went with a service is that it's

faster [than an in-house monitoring system! to imment, and it's more cost-effective," McKinney said D

Among other things, stu-

dents' analyses will be

Service app helps utility to compete

provides detailed analyses of loads on CONTINUED FROM PAGE 41 servers, the number of messages or tasks

waiting in queue and other measures. fore that could happen. PSE&G had to all of which fall under performance get a working system. management, which is one of the major A first attempt to establish a remot functions for any telecommunications field service system failed (see story at

In 1993, PSE&G relaunched its gas service information management system

(GSIMS). This time, with help from soft ware developer Sanient Corn., PSEAG got 400 dispatchers, customer service representatives and field service technicians involved before the first annivations were built.

THE CUSTOMER ISN'T A METER Systems such as GSIMS are fund tal for utilities to compete in a deregulated market, said David Cain, a manager at the Electric Power Research Insti industry think tank in Palo Alto, Calif. Utilities "are seeing that the customer is no longer a meter, but a client to win or

lose," he said. At PSE&G, users were asked what they wanted the field system to do for them. Field service technicians, for example,

said they wanted to know if another repairman had serviced a customer's appliance in the immediate past. In all, so 400 end users lent their input to GSIMS before rollout was completed in Novem ber, said Chris Davey, vice president of sales at Sapsent in Cambridge, Mass.

A diagram of failure

Like other PSE&G technicians, Andres Murphy' Jiminez was akeptical ab having to use a computer in his truck. The 18-year veteran repairman had scant computing experience and had grown ac-customed to calling in to a dispatcher to

hear a customer's service history. Now liminez can see that info for himself on his pen-based termina The system tells Jimines what previ irmen did at each customer's site. "I love it - I've got a full history of every-

thing I need," he said to have cost \$15 million to \$20 million. has delivered other benefits. In the first sarter this year, 35,000 gas leaks were eported throughout New Jersey. When gas leaks are reported, the New Jersey Board of Public Utilities requires utilities

fore GSIMS. PSE&G was achieving only a 98% response rate within an hour of gas leak reports. Information about the lenks had to be gathered, printed out

and assigned to technicians The new system enabled PSEAG ser-vice technicians to respond to 99.6% of its customers within an bour, or coo es than it would have been able to before GSIMS, said Greg Player,

Bookseller

CONTINUED FROM PAGE 41 site, for example, Barnes & Noble has built a "Web farm" that consists of seve

al Unix and Windows NT servers. By distributing applications across several servers — and then duplicating them in geo graphically dispersed marror locations the firm hopes to minimize the risk associated with unexpected hardware downtime. That gives Barnes & Noble flexibi ty to grow the system if the need arises. For example, the company is using

seven Intel Corp.-based servers from Hewlett-Packard Co. that run Winds

NT and Microsoft Corp.'s SQL Server to drive its Web site's title search engine alone. Having multiple servers run the same application lets Barnes & Noble bal-ance the load imposed on the system by The NT servers are linked to HP 9000 Unix servers that run applications that

handle ordering, shipping and customer "With Web commerce, you are looking as a situation where some of the usual is-sues relating to capacity planning and scalability become greatly amplified"

scalability become greatly amplified compared with other commercial appl cations, said James Garden, an analyst at Technology Business Research, Inc. in pton, N.H.O

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"You owe it to yourself to evaluate

IBM's DB2 Universal Database 5.0."

-Infoworld, 4/28/97



If you're searching around for the right database engine, a lot of legwork has been done for you already at www.software.ibm.com/db2press. But not by us. After evaluating the beta version, independent es refer to IBM's DB2° Universal Database 5.0 as the new big player on the competitive database scene, for how well it handles both traditional and complex data. With comments like, "Beta tests find more muscle. great looks in IBM's revamped database" (PC Week, 3/31/97). Also on the above site is the Bloor Report-an independent study comparing DB2 for Windows NT* to Microsoft' SQL Server in scalability, performance and reliability. And a revealing Computerworld customer satisfaction study of distributed DBMS vendors. Visit the site. Read the latest news. And right now, while 5.0 is in beta, download a free trial copy of DB2 for NT and form an opinion of your own



The Internet

The World Wide Web + Intronets + Online Services

Briefs Wallace:

ADVERTISING AGE





The king of spam

▶ Not everyone hates junk E-mail

The man who gets the blame for much of the junk electronic mail. on the Internet is Sanford Wallace, 28, president and founder of Cyber Promotions, Inc. in Philadelphia Distributing spam is Cyber Promotions' business. And being

attacked is just part of a regular The company has been the terget of E-mail bombs that have knocked out the computer systems. and lawsuits that have cost tens of thousands of dollars to settle. The company also has inspired proposed laws designed to curb or ban



pam. A federal judge last month uled that Other Promotions' E-mail to subscribers of EarthLink Network. Inc. constituted trespessing on EarthLink's systems.

But not everyone on the Internet is an enemy of the company. Wal-lace said Cyber Promotions has 9,000 customers and expects to

earn Sy million to Sy million in resonat this year, up from \$800,000 last year. Computer world smior editor Mitch Wagner recently spoke with Wallace in a

CW: ise't a company that sends out spam inviting all sorts

of attacks - mail bombs and hacker attacks? WALLACE: I guess you could

MCI [Communications Corp.] invites hacker atta when they call you in the middle of the night [asking you] to switch long-distance compa The king of spam, page 49

Users applaud Domino effect

I Lotus add-ons help Notes sites quickly set up Web sites, E-commerce apps

ect leader at Carlson Cos. in been shipping since the first

By Barb Cole-Gomolski NOTES SITES are giving Lotus Development Corp.'s line of ewritten Internet applications high marks, saying they can help users quickly churn out applications that require little

follow up administration. "[Developing] any of these ap-ications from scratch would be a lot more work," said lay Ramsperger, a groupware proj-

THE DOMINO.APPS FAMILY

Builds online

plications

such as appli-

Plymouth, Minn. Lotus bopes to expand the Lotus recently began to sell reach of Domino Merchant with three add-ons for its Domino links to IBM's enterprise-scale server - one for netting up a World Wide Web site, another for creating online commerce applications and a "push" application that pumps out inform

tion to Domino users (see chart nounced in December and have

Ships free with Domino Server

\$1,295

\$1,295

electronic-commerce system. The software is an attempt by **Neb** access

Lotus to address long-standing criticism that Notes applications are difficult to implement, said Stephes Morse, an analyst at The Burton Group, a research firm in Salt Lake City. He said large Notes sites have dealt with velopment demands by build-

ing a supply of in-house experts
"So these [prewritten] applica tions may appeal more to small shops — the people who have Users appliced, page 45

to Windows applications

By Lisa Picarille

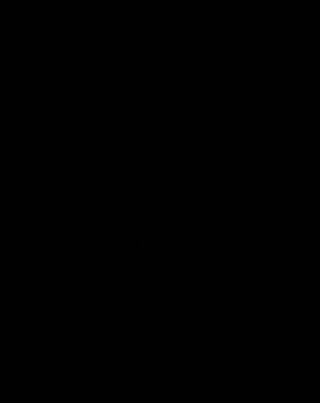
USERS WHO WANT to protect their investment in Windows dications while using the applications wrate usung World Wide Web to share software may soon get a new option

from start-up Epicon, Inc. The Waltham, Mass-b firm this fall plans to ship Altıs, a Windows-based client/server application that lets users access server-based Windows applica tions using a Web browser. It was designed to save time and bandwidth by feeding users only the parts of a Windows application they need. With a word

processor, for example, it might load only the test editor, not the spell checker or layout tools. That would give users almos nmediate execution of the ap plications on their desktops because there would be less code

Users beta-testing the prod uct, who asked not to be identi fied, applauded the prospect of being able to use their internal network as well as the Internet to help reduce the cost of maz

Web access, page 49



The Internet

The World Wide Web , Intrenets , Gollee Services

Briefs Wallace:

ADVERTISING AGE



\$92M*

From virtual to real

Online bookseller CBooks express in Sunnyvale, Calif last week announced it is buying Computer Literacy Bo

ops, Inc. in San Jose, Calif. with stores le Silicon Valley d Typons Corner, Va. Books Express said it ac-ed the shops so it could ooks in cyberspace and

h server software Flex Software Corp. in ige, Mass., last week ed the latest version of Virtuflex cross-pistform rare, VirtuFlex 2.0 lets depers build and test applis locally and ensu at they will operate in the oer as they will on y World Wide Web serve ed locally or rem

VirtuFlex 2.0 has been up d with features such as red administra

The kina of spam

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Users appland, page 49

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By Lisa Picarille

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Web access, page 45

THE DOMINO.APPS FAMILY What it does Ships free with Demino Action Creates Web sites Domino Server

Builds online \$1,295 applications

such as applications, text, video and plug-ins to **Domino users**

\$1,295 Sends content.



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The king of spam

nies. This is a new medium, and there are a lot of people out there who take a vigilante approach to fighting [spam]. But if people want to fight this type of activity, they should fight it in the courtrooms or in the law poccess. Not by sending E-mail bombs, or by threatening or by any other thins: they encourage

on many of the newsgroups.

CW: How do you guard against becoming a target for mail bombs and lacker attacks?

WALLACE: Due to the fact that we've dealt with so many attacks.

WALLACE: Due to the fact that we've dealt with so many attacks in the past, we have developed a security system that has been effective. Our systems haven't been compromised in over a month, which is for us a very big

accomplishment.

CW: Do you think a big business should look at epam as an advertising tool?

WALLACE: I think that large businesses are waiting on the sidelines right now. Power going to see over the next three or flew years large businesses getting involved in direct Evasil, large businesses have to look into developing a database of E-mui addresses of qualified recipients. That's die way they should wart out, the safe way, the smart way, General Moors cannot afford to take any chances on a new medium tilk this.

CW: How does a large business develop a database of E-mail addresses of qualified recipients?



ht Span on the Inter-

Marched Commun Marched Commun Marched E-mail

WALLACE: If you look at our service, if is very clean because we prepaulify. We have a primary making list of 3.2 million people. We sent 8-mat to these property from the pro

Users applaud
Domino add-ons

traditionally been intimidated by Notes," he said. Users who built their own applications probably will have to choose between keeping them

or moving to the add onn.

"I was perely impressed with
what you can do out of the box,"
said an architect at a large consulting firm, that it deploying
Domino.Action and Dominio.
Merchant. "The process for
masaging the Web site is already baked into the product,
which is great," and the architect, who requested anonymitywhen it tried to integrate its prepicteasy back end system with
Domino. Merchant, the raid,

Lotus' business partners seem to be more familiar with the applications. Several large sites said they are beginning to eye the applications now that their upgrades to Domino 4-5 are complete. Earner Sehm, Internet technology director at Virtual Intelligence Corp. in St. Paul, Minn, said he seer bronefits for large 1S organizations and mail sites. Domino Action, the application that constructs a Web site, can be used as a prototyping tool, Selim said.

SOME LIMITS
"Once a Web site is constructed, end uners are able to update their own content, without the assistance of 15," Selim said. He has installed the applications in divisions of large companies that have used them as the basis.

for a departmental intranet.
Although the apps are a welcome head start for Notes shops,
they still have limitations, users
asid. Developers are still restricted in the way they design.
Web forms. And it can be tougher to find a 'net service provider
to host your Domina application
than it would if the product were
written in pure Hypertent Markup Language, urers stail. O

CW: You had a court ruling that said you were trespassing on EarthLink.

WALLACE: The court said that sending unsolicited E-mail mits sending unsolicited E-mail mits EarthLink after they had sent a cease and desiat Jorden's was considered a tresposa. We were very fupoet with that. When you go and get a Mail Bores Etc. account and someone sends you junk mail, not only is it not trespassing, but it would be against the control of the con

and get a Mail Boree Etc. account and somerone sends you junk mail, not only is it not trespassing, but it would be against the law if Mail Boars Etc. decided to take that mail and throw it away or send it back. If you look for a parallel, that's the thing that I would think of. CW: Why do you think people

get so mad at you?

WALLACE: There are people
out there who just hate getting
advertisements in their E-mail
box. And we are the largest purveyor of this type of E-mail; so
thonk we really hit the right

CW: Can you see a point where this kind of E-mail will become accepted and a normal way for compenies to do business? WALLACE: Yes. When we started this business, everybody

said, "Nobody wants this garboge. Breeyhody's going it throw you off the Internot You're going to be out of business in a month," And here we are, there' years later, still plug ging away. And our ounknet ging away, And our ounknet are jumping higher than ever Sometimes it tules time to convert people to accept a new advertisting medium. But that trend is developing quickly, O

Intranet basics

ntranet Document Manage- uments" and

Addison-Wesley Developers Press, Reading, Mass., \$29.95, 295 pages (paperback)

(paperback)

ost webmasters will
probably already
issow what is in this

probably already probably already to the total to more. On the other hand, content providers and Internet newbies who have late technical background can use this guide to learn about most of the basic elements of building an intranet.

The book is also

mistided. It doesn't delve into document management until the last three chapters. The first eight chapters are devoted to Internet fundamentals, including lone, went company.

an intranet, security issues and design tips — all very large topics that have books devoted to them alone. So if it's heavy-duty document

So if it's heavy-duty document management information you are looking for this probably won't fit the bill until the author discusses "Managing large doc-

ment, A Guide for Webmascollections of documents" near ters and Content Providers
the end.

But there is a lot of practical, advice about updouding files to a World Wide Web server, how to organize and save electronic mail for future reference, reading "legs" feet from a bower, et. and so on. And there are lets to on many, in fact — for everything from File Transsfer Protocol and Post Office Protocol in different col and Post Office Protocol and feet of the book, and it distrupts the Bow of the information the the Bow of the information the

writer is trying to convey.

Still, if you are trying to come up to
speed on the Internet quickly, you
could do worse.

could do worse.

There is an appendix with a whole raft of uniform resource locators that could help even experienced. Internet

users or webmaiters get more information about specific top-ics, including where to find a list of all the file formats found on the Internet and an image map scripts test page. That alone could be worth the price of the book. — Johanna Ambrania

Web access to Windows applications

aging and deploying software.
They said Altas will let them
more quickly update software
without having to deploy the
pew versions on each desktop
and leverage existing Windows

Alis also is aimed at users de veloping electronic-commerce solutions, and online services that want customized interface to the device when the customizer is to download an entire customer res to download an entire customer entire application before they can place an order.

Esisting Windows applications don't need to be rewritten because Ahis acts only as a conduit to feed users the pieces of the applications they need. Ahis addresses two key issues in distributed computing — upplication availability and total cost of ownership — by looding only a minimal asmount of code Delivers only the piece of the application needed and delivers it over the Web

Executes application immediately

8 Updates software without having to deploy it to every desktop

Preserves investment in client/server application
while using the Web to access applications

Goulde, an analyst at Patricia Seybold Group, a market rea search firm in Boston. That makes it possible to distribute applications with little incremental cost per PC, he said.

The software comes in pieces to run at both the client and server. The server-based Administrator program includes Enabler, a Window-bosed utility that automatically determines

the structural makeup of an application. Enabler then creates a file of that application's structure. It provides the instructions for the client piece of Altis to run that software based on where the Windows application's individual components

Altis is due in the third quarter. Pricing hasn't been determined D



With the right protection, the century change isn't nearly so frightening.

. ison is or age 2000. Tixes your critical applications today so your business stalls hilled in the care applications.



The Enterprise Network

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<u>Briefs</u> LAN gear must go!

▶ Crowded internetworking market forces vendors to give users deep discounts, price cuts

By Bob Wallace

YOU DON'T LIKE the price of internetworking hardware? Wait a few weeks. You may not even

need friendly persuasion to get a price break Price reductions and deeper discounts are becoming a broad trend in the internetworking market as an overcrowded industry fights for a limited cus-

tomer pool. And users are reaping the benefits. Firms can save money as they introduce newer, more ad-vanced and more efficient technology in their enterprise networks. And that lets those firms relocate the equipment they re-

place to needy remote offices. We've taken advantage of this to deploy switched Ethernet to the desktop," said Peter Pollack, vice president of new technology and architecture at



New York, a Viacom, Inc. unit. "It's an opportunity to get other technologies like Fast Ethernet into your network faster, also,"

Users can now expect from the largest vendors a ay% to 30% discount off list prices, said Esmerelda Silva, an analyst at mational Data Corp., a research firm in Framingham,

To compete, second-tier vendors have to cut up to 50% off last year's list prices, she said.

FLOODED MARKET

Why the deep discounts? Despite rampant consolidation. here are still more than 70 ven-

dors making LAN switches, according to a recent estimate by The Yankee Group, a consulting and research firm in Boston. The sheer size of this market has made price cuts and discounting the order of the day in the internetworking industry, said Eric Hindin, an analyst at

The Yankee Group. "There's a real opportunity for users to save big in this environment. And it'll get better." Price cuts and discounts

aren't restricted to LAN switches. Vendors are buttling for business on other fronts, including adapter cards, hubs and routers. The same is happening Users block out Novell's white noise

Novell Directory Services."

Tools see R/3 from user view

Ru Patrick Drudos

UNDER PRESSURE to assure prompt service to internal users, rmation systems managers are seeking a user's-eye view of the performance of critical client,

Two vendors are trying to overcome shortcomings in existing tools by measuring remselves, starting with SAF AG's R/s applications.

Start-up Luminate Software Corp. in Redwood City, Calif. launched its entry last week at SAP's European user conference. Candle Corp. in Santa Monica, Calif., this month expects to ship its first response time monitors for R/3 and other

User view, page 54

COPPORATE F-MAIL

New software may ease in-box anxiety

By Sharon Machins WHEN WENDY KOTKOSKY got married recently, she faced the

daunting task of telling countless business associates her new surname and E-mail address. But instrad of notifying them herself, she let her electronicmail software do the work, creating a rule in Lotus CC Mail that forwarded messages to her new address and sent back an automated response explaining her

That saved me a whole lot of time and headaches," said Kotkosky, manager of project automation services at architectural and engineering company Fluor Daniel, Inc. in Irvine, Calif. "Otherwise, I would

bility as their primary network "I'm not happy to hear about Novell's woes," said Mike layjock, manager of risk assess ment and a senior research fel-low at Rohm and Hass Co. in

Turmoil doesn't scare change our feeling that NetWare still dominates as an enterprise Net Ware users - yet [network operating system]. We have 180 NetWare servers com-By Lawra Di Dio

USERS ARE concerned but not panicked about the ongoing tumult at Novell, Inc. Information systems manag-ers at large Novell NetWare

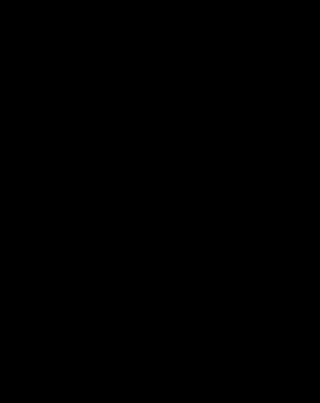
Provo, Utah-based Novell three weeks ago stunned anashops said they remain confilysts by reporting a dent Novell will deliver the directory services, cross-platfor its second quarform integration products and World Wide Web services they ter in fiscal 1997 rather than the need, despite the company's continuing financial woes, manslight profit analysts had expected. agement shake-ups and layoffs. But that confidence contrasts On the heels of the shrinking finan-cials, Novell also sharply with their concerns about NetWare's long-term viasaid it would repany and lay off 18% of its work-

> Then, 10 days ago, Joe Marengi. »

veteran who has served as the company's president and chief operating officer since last September, announced his resig nywide, and we're married to tion, effective at the end of this

"Amone who's already cor Hevel, page 55





The Enterprise Network

LANS . WARS . Network Menosement

Fast Ethernet hubs

s. The San Jose, Calif., ven-unvalid FastHub 216T, sec. ports. It costs \$149.pe ub 116T has 16 w ced the price of its

mware tool kil of Dispute C House and This week at PC Expo '97, in

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ave III. will travel

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switch ports



Briefs LAN gear must go!

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New software

in-box anxiety

rumame and E-mail address

may ease

By Sharon Machlis



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"It's an opportunity to get other

> Turmoil doesn't scare Net Ware users - yet

By Laura Di Dio

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Tools see R/3 from user view

By Patrick Dryden

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Traditional performance mo User view, page 54

Users block out Novell's white noise change our feeling that NetWare

panicked about the onsoins tu-Information systems manag dauntine task of telline count-

dent Novell will deliver the directory services, cross-platform integration products and World Wide Web services they need, despite the company's continuing financial wors, man address and sent back an autoagement shake-ups and layoffs.

But that confidence contracts sharply with their concerns about NetWare's long-term viability as their primary network

I'm not happy to hear about Novell's woes," said Mike Jayjock, manager of risk assess ment and a senior research fel low at Rohm and Haas' Co. in Philadelphia. "But that doesn't

still dominates as an enterprise [network operating system]. We have 180 NetWare servers compartywide, and we're married to Novell Directory Services."

Provo, Utah-based Novell three weeks

ago stunned ana lysts by reporting a \$14.6 million loss for its second quarter in fiscal 1997 rather than the slight profit analysts had expected. On the heels of the shrinking financials, Novell also said it would restructure the compuny and lay off 18% of its work-

force - about Then, 10 days ago, Joe Marengs. a nine-year Novell

veteran who has served as the company's president and chief operating officer since last Septumber announced by recumation offerton at the end of this month

Herrell, page 55



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- Jerry Pearwells, SYTE antine/Chans Manor Oct. 1, 1996

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down. PowerChute be a provided system abuttion and IPS measurem for Windows and users, and
AC Sumer and other operating systems. Manage your
and users, and
averts power prob-

lems before they result in costly downtime – all without the need for additional support staff. PowerChute plus' FlexEvents' feature can page you when an out-of-bounds environmental condition occurs or physical security is violated. APC's NEW WebAgent' allows



administrators to monitor and manage their Smart-UPS via their Web browser. NEW WebAlert* notifies users of Web server shutdown via their brows er. PowerChute plus, S

er. PowerChute plus, with its included PowerNet' SNMP agent plug-in, provides remote power

vides remote power cut-of-bend pour management and management environmental monitoring.



"We've used APC here for at least 3 years - it is our de facto standard. Their PowerAudit engineers tested

ing, one fund indequaries union recurring ections and SAF system. The combination of m software, our-sist consulting and high quality or protection products have given as the fash! tol w that we need to protect our insestracts." "To be the control to the combination of the combination of

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attack networks relentlessly; if you want to protect your hardware and users from system crashes, and protect yourself from service calls, you need the world's

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Internetworking

CONTINUED FROM PAGE 51

"This means we can introduce newer and more advanced technologies into our networks faster and less expensively," said Joe Askins, director of data communications at Artsona State University in Rempe. The college is a large Cisco Systems, Inc. shop," Tif's a smart move for users and wendors," Askins said.

users and wendom." Askims said.

But what makes things tough for vendors and internifies price competition for
users is that users rarely throw away their
equipment in favor of new gear. Older

User view of R/3

CONTINUED FROM PAGE AT

itoring tools didn't help us determine how productive users could be with our suite of R/s applications," said Mike Mc-

Coy, manager of information systems at FileNet Corp. in Costa Mesa, Cali. Central operators could see snapshots of utilization for the application and database servers, McCoy said. But they would have to translate system, network and application statistics before they could determine how well the vital business functermine how well the vital business func-

tions performed, he said.

Autodesk, Inc. was in the same predicament. "No comprehensive tool could let us see from a desktop all the way back in to the servers hosting the applications," said Dave Recline, a systems administrator at Autodesk in San Rafael, Calif.

Both companies tentel Luminate for SAP Ry, which gathers performance details from a PC at each business unit, and from agents on servers. Its data must converts measurements and technical Those explain suitability, response time and work accomplished by transaction type for each application and user group. McCoy used he can track the experiment of users on campus and at six insection of the continuous companies. The Recht is add funnished provides good

graphical representation of data that was previously hard to get. Its baseline for network and system response times "lets us detect bottlenecks before they happen," he said. Pricing for Luminate for SAP R/3

starts at \$50,000. It ships next month.
Candle's approach requires agents that
monitor end-user activity at each client.
The ETEWARTh line of agents watch specific applications in order to report endto-end response time. Tools in the ETE
Watch line can track performance for an
individual user or send reports to an administrator's console.

Big maites of systems management tools can provide valuable information about SAP Ry and other applications, said David Passmore, president of network consultancy Decisys, Inc. in Sterling, Va., but they don't yet measure response times directly. U

equipment doesn't die, it is just relocated.
"We shift older equipment, like hubs,
to remote offices as we install LAN
switches," said Mike Bannon, communications manager at Mercy Health System
of Southeast Pennsylvania, a large 5Com

or of Southeast Pennsylvania, a large 5Com ur Corp. customer in Bala Cymwyd, Pa. "This saves us money by delaying the uneed to buy new equipment for these smaller offices."

pment, like hubs, to get users to move to more expensive we install LAN and newer equipment. But users rarely smoon, communistry Health System min, a large yCom.

Although it is always a big factor, price instit the only criterion when selecting an

Atthough it is always a big factor, price isn't the only criterion when selecting an equipment vendor. And sometimes deep discounts come too late in the process.

"Once a competing vendor learned [we] had decided to go with one of their

grade programs and related pro

competitors, their senior management got on the phone and out their bid in half," said a network manager at a Northeastern hotopital, who requested anonymin, "But we'd pretty much made our decision, and we rated the vender we chose higher on technology," he said. Pollack said users don't have to sacri-

cision, and we rated the vendor we chose higher on technology," he said. Pollack said users don't have to sacrifice price in hig buys. "If need be, we tell our vendor what the competition is offering, and they always match it," he said. I

Software helps rein in E-mail

CONTINUED FROM PAGE SI

axil to all those people." As the volume of corporate E-mail conues to rise, some users seek software technology to help manage the crush.

Dan Barth, vice president and chief information officer at Pinnacle Brands, Inc., a trading-card maker in Dallas, said intranets could help stem the flow of at least some types of messages. Putting corporate news on an intranet would let people tap into the information they want without messages piling up. "It takes too much time to go through and delete

Truly intelligent E-mail agents that

them " he said

could scan messages for content and decide what is important are probably far off. But some users said the ability of most corporate E-mail systems to combine rules and automate replies is helping them manage their mail.

I just got back from vacation. I had 268 messages," said Eric Carpenter, a network systems engineer at Akin, Gump, Strauss, Hauer, Feld, a law firm in Dallas. His personal rules sorted the

mail and trashed the daily announcements that appeared while he was out. Mobile users who try to call in over bad telephone lines should institute rules so that large messages and attu ren't automatically downloaded. Koti sky said. "That can make or break your ability to communicate," she said. If users want rules to forward or re ond to messages when they are out of the office, an organization must have a mail package that can run rules on the server, said Mark Levitt, an analyst at International Data Corp. in Framingham,

A client-based rule wouldn't forw appropriate mail, for example, unless that client was logged in to the networ on their desktop systems to sort through the mail when they return.

For now, even after initial sorting and screening, there is still no substitute for plowing through the electronic pile that builds up after time out of the office. "There are no great, realistic solutions," said Mary Ellen Condon, director of man agement information and security at the U.S. Department of Justice: "If I had a clone, that would be one of the clone's reconstitution "C

nior editor Barb Cole-Gomolski contrib uted to this report.

Novell users stick by vendor

CONTINUED FROM PAGE ST.

mitted to NetWare won't jump ship over some bad financials and management shake-ups. And Novell has more to gain than lose by restructuring," said Josh Turiel, IS manager at Ad Life Marketing

Corp. in Norwood, Mass. "Reorganizations are always painful and they're going to continue to have rough going for awhile. But I give Novell points for biting the bullet and making the necessary moves to get back or track," said Robert Ziedelis, assistan

director of IS at Ad Life But even users who are rooting for No nut even users who are rooming for ro-vell to stay in the game as competition for Microsoft Corp.'s Windows NT Server ex-pressed a feeling of inevitability about Microsoft's operating system. "My feeling is that eventually we'll end

up being a Windows NT shop, because we're being pushed in that direction by our third-party application software st pliers," said George Hoffman, techn poers," and George Horman, rectano-ogy services manager at Penobecot Bay Medical Center in Rockland, Maine. He said Midas Corp., which sells proprietary medical software applications, has told the hospital that future selesses of its

software will support only NT.

But the prospect of a Microsoft-takesall world doesn't appeal to some users.

"I'm rooting for Novell to get its act together, but I'm worried it may not work out that way," Jayjock said. "I have a nag-

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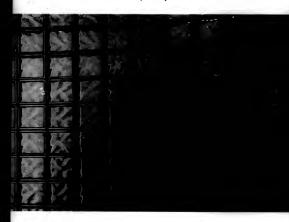
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Miley, pers

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Software

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Companies expand data warehouses to satisfy users' demand for access to raw data

By Craig Stedman

SOM STIMES A plain old data warehouse just isn't enough. Many companies engaged in warehousing projects find that their end users want to analyse raw business data that didn't make it into the pools of historical information, which often are beavily summarized to boost

query response times.

In addition, users aren't willing to wait for the data to be
cleansed and loaded into the
warehouse before they can fire
away with analytical queries.

GIVE 'EM WHAT THEY WANT Those twin demands are push ing some information systems

departments to augment their data warehouses with repositories that store production data in all its detailed glory. The repositories can be used to satisfy crawings for access to raw data without opening up mainframes and other production systems to end asters — steps most companies want to avoid because of concerns about security and overloading a production systems (FW, Ee, k).

pository as both a staging area to load its data warehouse and a long-term storage space for detailed data on book sales, returns and orders. "We don't necessarily want to bring all that garbage into our data warellouse," said David Bruce, manager of database systems at the New York-based publisher. "That's not stuff poo-

Augmenting data depots

ple are interested in on a day-today basis, and it would make the warehouse too difficult to navigate."

But the raw data is needed at Augmenting, page 60

RAD Java tools lure business users

By Sharon Gaudin

THE INCREASING availability of rapid application development (RAD) Java tools means that corporate developers will get applications out of the lab and into production anywhere

from 10 to 100 times faster.

Users and analysts agree that the growth of RAD tools will increase the rate of Java adoption in the corporate arena, moving Java development out of the realm of software vendoes and into the business world.

SPEEDING UP THE PROCESS RAD tools, which aim to speed

RAD tools, which aim to speed development time, move the development process away from basic code writing. They often offer drag-and-drop capabilities

the important is it for application development tool to support Jave in 15 department(2 — 3% Very important



lase: 73 corporate softs: levelopers

code development so that when a developer writes a certain chank of code, the tool will write

JAVA ADOPTION the chunk that naturally com

Influential application development tool vendors such as 55 mantee, i.e., and Bordand International, Inc. have offered RAD Java tools, but more companies have joined the market in the past three or four months. This new wave of tools is part of Java's natural maturation as the language comes into its own.

For example, two vendors have made introductions in the area in the past few months. Seattle-based Asymetrix Corp. recently released two RAD editions of its Java development environment — Super-Celle Java/ActiveX Edition and Super-

Gede Database Edition, which is specifically grared to database creation. And start-up Silver-BAB tools, page 60

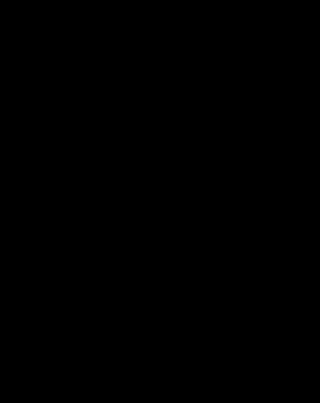
HR POLICIES

Oracle unveils workflow application

By Randy Weston

of OBACLE CORP. IS rolling out a te human resources application module with a built-in workflow system that will let users inits cude corporate policies in their seaftware system.

Available now, the release is part of the Oracle Applications ro.7 software package. Among the enhancements to the application is an integrated business rules manager that triggers hierarchical approval mechanisms should certain changes be made



Software

Briefs RM marketing tools

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ing, Intel Corp.'s In-dee Phone and White

Companies expand data warehouses to satisfy users' demand for access to raw data

By Crase Stedmen SOMETIMES A plann old data

warehouse just isn't enough. Many companies engaged in warehousing projects find that their end users want to analyze raw business data that didn't make it into the pools of historical information, which often are heavily summarized to boost query response times. In addition, users aren't will-

ing to wait for the data to be cleansed and loaded into the warehouse before they can fire away with analytical queries: THAW YENT THAW ME' BYID

Those twin demands are pushing some information systems departments to augment their

data warehouses with repositories that store production data in all its detailed glory. The repositories can be used to satisfy cravings for access to raw data without opening up main-frames and other production systems to end users - steps most companies want to avoid because of concerns about secunty and overloading a production system ICW. Feb. 4l.

For example, Random House,

Augmenting data depots



Inc. blans to use a separate repository as both a staging area to load its data warehouse and a long-term storage space for detailed data on book sales, returns and orders.

"We don't necessarily want to bring all that garbage into our data warehouse," said David Bruce, manager of database systerms at the New York-based publisher, "That's not stuff peo-

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RAD Java tools lure business users

By Sharon Gaudin THE INCREASING availability

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development time, move the development process away from basic code writing. They often offer drag-and-drop capabilities and have wizards and automatic

JAVA ADOPTION How important is it for



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specifically geared to database creation. And start-up Silver-RAD teels, page 60 HP POLICIES

Oracle unveils workflow application

By Rendy Weston

ORACLE CORP. is rolling out a human resources application module with a built in workflow system that will let users include corporate policies in their software system. Available now, the release is

part of the Oracle Applications to/7 software package. Among the enhancements to the application is an integrated business rules manager that trippers lucyarchical approval mechanisms should certain changes be made







Augmenting data depots

times for lustorical reporting and analysis. Bruce said. The warehouse proper will be limited to three years of surrized information, and data will be added and deleted each month. By contrast, the commanion repository is seen more as a bottomless pool of data "where nothing

ever changes," he said. For now the data warehouse and the raw data repository, expected to reach 150G bytes by year's end, will share a Unix server and potentially even be managed under a single Informix Software Inc. database. But Random House may spbt them up "as we get more and more data down the road." Bruce said.

TAKING A SIMILAR ROUTE

Eudelity (revestments in Roston is eveballing a similar approach to solve a slightly different problem. Its risk-management employees want to have access to mutual fund trades more quickly than the twiceper-day feed the company's data warrhouse allows now

To meet those demands, Fidelity plans to implement a "trickle feed" that updates trades every is minutes, said Barry Rosen, principal data warehouse archi-

tect and consultant at the company. That would let the company slam the data in there and let people ask real-time quenes" he said Fidelity's trading data is warehoused

in a decision-support database made by Red Brack Systems. Inc. on Sunnycole Calif. But Rosen said Fidelity is consider ing using an Oracle Corp database to manage the more transaction-oriented trickle feed process. The information stored there would then get rolled up into the Red Brick warehouse for use in his

Such repositories are offshoots of operational data stores, which originated as a way to mit recent account informa tion in the hands of customer service

An obvious potential roadblock facing the technology is cost, because it could require companies to add a significant amount of disk storage "But people are realizing that the real

nuggets of information are in the detail data " soud Wayne Eckerson, an analyst at Patricia Sevbold Group in Boston, 'If you're just looking at summanes, you could miss a lot of stuff " [

RAD tools lure business users

-----Stream Software Inc in Boston an-

nounced its own RAD Java tool -- Silverwriting a bunch of code. That's really irritating," said Jeff Winchell, a software architect at Application Methods. Inc., a consulting and freelance development

libraries. I could build my own, but that could take a year or three or five. Using a

PRODUCTIVITY HIKE Winchell, who uses Asymetry's develop ment environment, said he now does more than to times the Java development than before he began using a RAD tool.

Aside from SilverStream and Asymet rix, other RAD Java tool vendors include PowerSoft, Inc. with Powerl, Borland with IBuilder, IBM with VisualAge for Java and Netscape Communications Corp. and Visigenes, Inc., which tearned

Evan Ournn, an analyst at Internation al Data Corp. in Framingham, Mass., said the proliferation of RAD Java tools is entical for Java adoption. "There's a finote and small number of developers who are purist, object-oriented, codewarrior programmers. There's probably a firm in Seattle. "If you're not using a factor of three times as many business-RAD tool, you have to build up your own level developers who build with RAD tools instead. They hold the key to major

up to offer Caffeine.

Java adoption

Karen Boucher, director of The Standish Group International, Inc. in Dennis Mass., agreed. She added that RAD tools also are important in Java's ongoing battle with Microsoft Corp 's ActiveX. 'ArtneX has a hupe head start on de-

velopment tools with Visual Basic, Visual C++. PowerBuider and Delphi." Bouther said. That means it's easier to start using ActiveX than Java. The more develcoment tools that come out for lava, the more Java will get into the corporate development community."

Oracle unveils HR application to employees' personnel files.

For example, if an employee makes a ment on a review form, the change will be sent to the appropriate supervisors based on a preset hierarchy. Judy Hodges, an analyst at Internation

al Data Corp in Framingham, Mass., said that although most vendors' human resources applications have embedded workflow the unique piece of Oracle's offering is the ability to follow a hierarchical structure based on a particular company's comorate structure Hodges said that even though Oracle

radmonally hasn't been strong as a human resources application vendor it is gaining significant market ground. Oracle's product gamered \$45 million n revenue for the Redwood Shores. Calif.. company last year, a 114% increase from the previous year Oracle helds 2.8% of the human resources application

market, good for fifth place behind leaders SAP AG and PeopleSoft, Inc Yale University in New Haven, Conn.

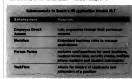
is investing \$30 million to overhard isc human resources and financial systems

using Oracle applications. Chuck Paul, director of total compensation at the Ivy League school, said the integrated workflow was a much-needed feature to manage the complicated process to annomit faculty.

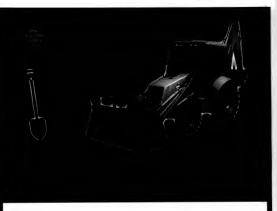
'Each school (within the university) has its own sets of rules, and different levels in a school have different rules so that an associate professor needs a different number of votes than a lecturer, for

example," Paul said. Paul said that process now is handled by paper, with paper votes flowing from one in-hox to another in various offices.

The biggest problem is that once the paper leaves the first office, you have no idea where it is." Paul explained. "With this new system, you can intelligently route the votes so they go to the next stop then the next stop. You can track it and see in the system where it is and what vote it is waiting for "D







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a lot of mileage out of



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Briefs Iron mix nabs debtors better

➤ Unisvs NT/mainframe box helps bill collector

By Tim Osellette

THE SILL COLLECTOR WON'T be fooled this time. With a combination of big iron processing and easy-to-use Windows NT applications. Wolpoff & Abramson, a collec-

counts every month, catch debtors in hes they may have

tion agency in Bethesda, Md., can now move a nonpayment complaint from initial contact to a full lawsuit in two days. And the access to better information lets employees, who process 60,000 new delinquent ac-

used a number of times before The agency did this by install ing Unisys Corp.'s ClearPath HMP NX4800, a mainframe system partitioned to include Intel Corp. Pentium processor

running Windows NT in the same box. 'Now we can tie the two worlds together," said Don Mill er, Wolpoff's chief information

"The mainframe will start to look more like a PC for OUT USETS ClearPath HMP's mixed environment (dubbed betreoreneous multiprocessing) lets

us NT Server

Windows NT applications move data quickly to and from the

mainframe for quick processing and analysis, instead of waiting for overnight batch jobs ClearPath has given Unisys' 8,500 large mainframe sites a chance to easily upgrade their aging A Series or 2200 manes, analysts said. And users can modernize the systems. which aren't compatible with IBM's popular \$/390 mainframes, by working with newer Windows NT applications.

Windows NT Server is our basis for intranet and office applications," said Robert Helwig a technical support analyst at the agency. "We had a lot of nun-Mainframe, page 67

NetPCs to launch at **PC Expo**

By April Jacobs

FROM SERVERS TO NETPCS. & plethora of vendors will show off their new hardware at PC Expo in New York this week. Intel Corp. in Santa Clara, Calif., plans to host an event today to show hardware that meets the specification for Microsoft Corp. and Intel's jointly developed NetPC. The NetPC is a stripped-down PC that is sealed or locked to keep users from changing it and to reduce maintenance. Dell Computer Corp. in Round Rock, Texas, will be among the vendors to dem-

onstrate the machines. Unisys Corp. also will preview rvers, desktops and laptops at the show. It will demonstrate a 10-way Windows NT system from its Aquanta line.

Packard Bell-NEC will show additions to its Express5800 line of servers, which range from small-business to mid-

NEC in Sacramento, Calif., said it will announce the MH4000, a four-way server that scales to four 200-MHz Pentium Pro chips, with prices starting at less than \$10,000. MetPCs, page 67

By Howard Millman

SPEED! Digital Equipment Corp.'s 433A workstations will have users reaching for their seat belts and aviator's goggles when running native applications under the Alpha-optimized version of Windows NT. My test machine, the Digital Personal Workstation 433A for Windows NT, targets technical users who demand extensi graphics processing and float-ing-point capabilities for computationally intensive tasks

such as computer-aided design, geographic information systems and scientific prototyping.

Available with 433-MHz, 500-MHz (and soon 600-MHz) CPUs, the three versions offer an attractive price/performance ratio and stand out as robust contenders in affordable 12/64 bit workstations. For their mon

REVIEW Digital's 433A workstations and FX32 emulation software

Alpha apps thrill, but others stall

ey. 433A system purchasers reblazing performance; Digital estimates the 433A car at least double the overall per formance of Intel Corp. Pen-tium Pro-based workstations.

But remember, to achieve those tire-burning speeds with the Alpha, you need native applications. Alpha-opti Speedy, page 69



Laptops, notebooks get even thinner

Toshiba sparks shift to lighter, smaller portables By Mindy Blodgett Inc. in San Jose, Calif.

TOSHIBA AMERICA'S recent isunches of ultraportable inp-tops and "mini-subnotebooks" that weigh less than a pounds were just the beginning of a

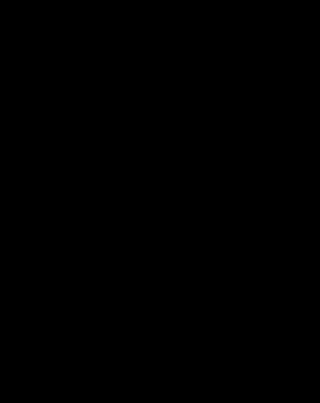
"It looks as if there may be a dramatic shift to lighter, smaller notebooks in the coming year in the industry," said Ken Dulaney, an analyst at Gartner Group

from Toshiba America Inform n Systems, Inc. in Irvine, Calif., announced June 2. Pack ard Bell-NEC in Mountain View, Calif., is expected to release Laptops, page 67



796 hard disk drive





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n heats un stora procystems, managed up its storage

rare offerings by ship ral tools for its S ers. The Mountain View, L, company licensed tech-gy from Veritas Software

sentproducts. In also has rewritten Veri-Volume Dick Manager for ioloris and is using Veritas' ile System for overall data

G switches servers General Corp. has ed from Motorois, inc.

chips to power its second stion of Aviion servers. he servers can support up to 32 200-MHz Pentium Pro ors in one large, cessing system. The let the servers run on ndows NT and Unio ns. Pricing for fou or systems of ns starts a

rols, Inc.

ers to Intel Corp. Pen-

1996 hard disk drive



Iron mix nabs debtors better

Unisys NT/mainframe box helps bill collector

By Tim Owellette

THE BILL COLLECTOR WOn't be fooled this time With a combination of big iron processing and easy-touse Windows NT applications. Wolpoff & Abramson, a collection agency in Bethesda, Md.,

can now move a nonpayment complaint from initial contact to a full lawsuit in two days And the access to better information lets employees, who process 60,000 new delinquent accounts every month, catch debtots in lies they may have

NetPCs to

launch at

Expo in New York this week.

maintenance. Dell Computer Corp. in Round Rock, Texas, will

be among the vendors to dem-

Unisys Corp. also will preview

servers, desktops and laptops at

the show. It will demonstrate a

to-way Windows NT system

additions to its Express(800

line of servers, which range

from small-business to mid-

starting at less than \$10,000.

NEC in Sacramento, Calif.,

Packard Bell-NFC will show

onstrate the machines.

PC Expo

By April Igcols

ClearPath

er. Wolpoff's chief information officer. 'The mainframe will start to look more like a PC for HMP's mixed environment (dubbed beteroneneous multiprocessing) lets data quickly to and from the

Intel Corp. Pentium processors

running Windows NT in the

"Now we can tie the two

worlds together," said Don Mill-

used a number of times before. The agency did this by installing Unitys Corp.'s ClearPath HMP NX4890. a mainfram system partitioned to include

Unisys' ClearPath HMP Includes CMQS mainframe processor · Intel processor in

separate partition Master Control Program/Advanced

Server operating system Windows NT Server Windows NT applications move

mainframe for quick processing and analysis, instead of waiting for overnight hatch jobs ClearPath has given Unisys' 8,000 large mainframe sites a chance to easily upgrade their aging A Series or 2200 machines, analysts said. And users can modernine the extense which aren't compatible with IBM's popular S/390 main-frames, by working with newer Windows NT applications Windows NT Server is our

basis for intranet and office applications," said Robert Helwig, a technical support analyst at the agency. "We had a lot of sup-Mainframe, page 67

REVIEW> Digital's 433A workstations and FX32 emulation software Alpha apps thrill, but others stall

By Howard Millman

speed! Digital Equipment Corp.'s 411A workstations will have users reaching for their seat belts and aviator's goggles FROM SERVERS TO NETPCS, a when running native applications under the Alpha-optiplethora of vendors will show off their new hardware at PC mized version of Windows NT. My test machine, the Digital Intel Corp. in Santa Clara, Personal Workstation 433A for Calif. plans to host an event to-Windows NT, targets technical day to show bardware that users who demand extensive meets the specification for Migraphics processing and floatcrosoft Corp. and Intel's jointly ing-point capabilities for comdeveloped NetPC The NetPC is nutationally intensive tasks a stripped-down PC that is such as computer-aided design, scaled or locked to keep users prographic information systems from changing it and to reduce

and scientific prototyping,

Available with 415 MHz, 500 MHz (and soon 600 MHz) CPUs, the three versions offer an attractive prior/performance ratio and stand out as robust contenders in affordable 22/64 bet workstations. For their mon ey. 433A system purchasers receive blazing performance; Digital estimates the 41tA can at least double the overall performance of Intel Corp. Pentium Pro-based worksta But remember to achieve those tire-burning speeds

with the Alpha, you need na tive applications. Alpha-opti mized applications are plenti-Speedy, page 69

PRODUCT REVIEWS

Digital's Personal Workstation 433A



Laptops, notebooks get even thinner

▶ Toshiba sparks shift to lighter, smaller portables By Mindy Blodgett Inc. in San Jose, Calif. In addition to the laptops

TOSHURA AMERICA'S PECENT launches of ultraportable laptoos and "mant-subnotebooks that weigh less than a pounds were just the beginning of a growing trend, undustry observ-

said it will announce the MH4000, a four-way server that "It looks as if there may be a scales to four 200 MHz Pendramatic shift to lighter, smaller tium Pro chips, with prices notebooks in the coming year in the industry," said Ken Dulaney, NotPCs, page 67 an analyst at Gartner Group.

from Toshiba America Enforma tion Systems, Inc. in Irvine, Calif., announced June 2. Pack ard Bell-NEC in Mountain View, Calif., is expected to release some ultraportables in the next Laptops, page 67





Industrial

stre g h.

Presenting the world's first 10X server for Windows N





The first enterprise server

for Windows NT° with up to ten 200 MHz Pentium Pro

processors. Highperformance system bus. Up to 8GB ECC memory and

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Engineered for maximum availability, the HS/6 offers up to six 200 MHz Pentium Pro processors. Dual peer PCI/EISA bus. Six RAID-ready bays. 12 slots. And up to 468 ECC memory and 512K8 L2 cache.

Plus VisiNet-II systems management software. Rackmount also available.



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A "must-buy" server...When was the last time you've heard such a strong recomendation from a magazine as technical and prestigious as bu6Work? It doesn't happen often. Which just shows how advanced and affordable the ALR Revolution 6X6 is.

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on the mainframe, but it did not make sense to replace the mainframe with a Unix server either For example, to keep updated telephone listings to track deadbeat consum ers. Helwig used to copy the monthly CD-ROMs to tape, then load the data into

dows NT can now hold the CD ROMs and give the mainframe only the data it needs, while letting users access the information more quickly.

Although officials at the longtime Unieys shop considered moving operations to a large Unix-based client/server system, they decided big iron reliability was

A CD-ROM sower managed by Win

We can't talk to anyone without our database system, and that just can't afford to go down," Miller said. "That's where the mainframe plays."
Unisys, based in Blue Bell, Pa., isn't

the first vendor of mainframe or midrange systems to try integrating Win-IBM's AS/400 has its own Intel-b PC board that will eventually run Windows NT applications (CW, March 3).

And IBM's mainframe operating system, OS/190, can now support Windown NT applications through a thirdparty interface, not onboard the ma-

the mainframe over the weekend Laptops get even thinner

CONTINUED FROM PAGE 63

few months. And other vendors are expected to follow What Toshiba calls a mini-subnote-

book is smaller than the average laptop but larger than a handheld device such as a personal digital assistant (PDA). An ultraportable is sumply a lighter, thinner,

full-size notebook. Disers said lighter 'It remains to be and smaller notebooks are welcome as long as they are available in sufficient quantities and deliver trade-off with good performance at these lighter low prices.

"Anything lighter and thinner is welcome and would be desirable to my users." said George Staton, information systems director at

Commerce Bank in Cherry Hill, N.J. "But looking into the future, I have to buy what is available when I need it. I have many users who would appreciate a light er lanton when they're on the road - I would myself. But sometimes, the supplies just aren't there after they make

these big announcements But not all industry observers expect the lighter notebooks to take off in the marketplace

"I think there is a niche market only for lantons like the Librettos from Toshibs," said Randal Giusto, an analyst at In-

ternational Data Corp. (IDC) in Framing ham Mass "It remains to be seen, but there is a performance trade-off with these lighter notebooks, and there is a hmited market for them."

Recently, Toshiba announced the fol-Billed as the industry's first notebook with the Windows os operating system to weigh less than a pounds, the Libretto 50CT is what Toehsba officials call a muni submotebook. The small notebook has a 75-MHz Pentrum processor, a color

screen and a 772M-byte hard drive. It will sell for \$1,000 The Portege 300, an ultraportable that weighs in at 4.8 pounds, will have a 133-MHz MMX Pentium processor with an active-matrix color screen and an integrated 33.6K bit/sec. voice/data/fax modem. It will cost \$3.499. []

NetPCs to debut at PC Expo

The MH4000 features 512K bytes of La cache, hot-pluggable disk drives, six Peripheral Component Interconnect and four Extended Industry Standard Architecture slots and 54G bytes of disk

And IBM will discuss additions to its System Care hardware, service and support program, which it launched last No-

The company will add service bon dlings through business partners. System Care lets users lease equipment and urchase service and support through IBM and its business partners for a monthly fee, which includes start-up planning and integration.

Faster Alpha workstation

estation Technology, Inc. last week upgraded its workstation line of on the 600-MHz Alphs chip. The company is among a ha scturing systems based on the Digital Equipment Corp. chip. The Rufflen Ri are NT workstation, which is simed at the mechanical computer-aided design on and World Wide Web application markets, su te cache, 4G-byte ultravide SCSI drives, 12-speed CD-ROM and three-d graphics. Pricing starts at \$5,995.

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modity in the world of office productivity.

FX32: NOT PRIME TIME YET

Digital bundles in the EXXX emula

Digital bundles in its FX32 emulation/translation software, which it says allows the Alpha-based boxes to mirric Intel Pentiums. However, my bests indicate that FX32 isn't quite ready for prime

The test unit employed a 439 MHz Alpha artic4 processor with a 3M-byte octernal cache and 128M hytes of RAM, which can grow to 126 Oyler. Interest to 120 Oyler of RAM, and the state of RAM, apples specific version of NT comes preloaded. Connecting Digital's 10/100-3ase-1X Fast Ethernet network interface

card to my NT network went smoothly. The 4334 delify fills the gap between Pentium Pio-based workstations that run Windows NT and low-end Units workstations, providing you run native Alpha applications. As Digital continues to increase the speed of its Alpha chips and educe FX3-18 incompatibilities, it is likely just a matter of time until the two pructs egual or surpses the performance of

Intel's fastest Pentium chips.

Dispite the impressive performance of Digital's 43,14 workstation for native RISC applications under Windows NT. most of the world's office productivity software nurs on Intel CPUs.

Understandably, users want to buy and maintain one computer to run both their technical applications and general computing software. Digital said its FX32 translation software provides the best of both worlds. Unfortunately, in my tests. FX32 suffered from compatibility, config.

uration and performance wors.

The first time you run an Intel/X86 application, FX3a acts like an emulator, imitating X86 code and calls. Each subsequent time you run the application, FX3a continues to learn more about how the application operates. Working in

the background, it creates an Alphaoptimized version of the X86 application's Gode. Theoretically, after you run to X86 application a few times, you should achieve about the same level of performance the software will proceed when running on a Pentium Pro. My experiences differed. Where running Microsoft Office 49 few Windows 93 and Corel Corp's, 50ffice for YT under PK3a, their overall performance equated to what 1 would expect from a boo-MHz Pentium.

PRODUCT REVIEW P

(Alpha RISC/CPU to Intel/CISC code emulator and translator)

C Maynard, Mass.
unva.digital.com
Comes bundled with
Alpha/Windows NT

In spite of Digital's promise that Vertion to of Fix, which shipped with the machine, will run 3-bit Windows applications smoothly, I initially experienced a variety of problems loading and running. Microsoff's and Coref's suites. The system generated random lockups, delays and overall bizarre behavior. Adobe Systems, Inc. v "Appelhaker 6. oven generatred a kiss-of-doom message." This software requires an Intel processor."

After several conversations with the company's helpful-where you can reach them technicians (sea heesion required to the control of the contr

I recommend caution when running

P R O D U C

Intel applications until Digital releases
Version 1: 3 of FX32 (now in beta) and the
Goo-MHz Alpha CPU. According to a
Digital spokenman, the never version of N.

and increased compatibility. When combined with the forthcoming 600-MHz Alpha CPU, the duo could prove awesome. Time will tell. O

Millman operates the Data Systems Services Group, an independent networking and problem-solving consultancy in Creton, N.Y. He can be reached at hmillmands maintail.com.



APS TECHNOLOGIES has astnounced APS ShortStack RAID, a storage and backup

company, the Arts aboresines (ALD or fers fast 1/0 times. It is compatible will Power Macintush 5500 and 9500 computers and employs Meta Book, Inc.* Power/Book controller software. There types of azzays with four different driv configurations are available. Pricine starts at \$1.500.

APS Technologies (310) physics www.apstech.com AM COURT COUR has amounted its Universal Voltage Source (UVS), a device that climinates plug-to-the-wall trans

According to the irrute, Calif., conpany, the UVS contains those entering power sources for fower voltages an currents that can be pelacted by switch es. Two port expanders are available which means that up to ets peripher.

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Data Warehousing

Special Booos Technical Section

Briefs Turning to outside warehousing help

Maintaining project control is important

By Craig Stedman

A LACK OF internal data warehousing skills continues to force consultants for help. But for many IS departments, consul-tants are becoming more of a shot in the arm than a warehousing cure-all.

The nature of data warehouses makes it hard to simply call in consultants or systems integrators and then sit back while they develop an implementation for you, according to information systems managers who have slogged through the warehousing process.

For one thing, a consultant robably won't have the intinate business knowledge that is

cessful data warehouse. And putting everything in the hands of high-priced outsiders could of high-priced outsiders could leave you dependent on them for the ongoing alterations that inevitably have to be made as business needs change. As a result, several warehous-

ing managers said they are signing on consultants or integra-tors to jump-start projects rather than have them do all the driv-

It reminds me of an old saying: 'Give me a fish, and I can eat today. But if you teach me how to fish. I can busically eat for a lifetime," said Frank Brooks, manager of data resource management at Blue Cross/Blue Shield of Tennessee, a Chattanooga-based health in-

Blue Cross/Blue Shield last Outside bale, page 72



Users not convinced of

Plan for data marts

SHAKU ATRE in contrast to this picture, a

T's OFTEN sobering to see the difference between user survey conducted recently what data warehousing exby Atre Associates found that perts advise and what users acmost of the respondents don't tually do. make much use of summary Quite rightly, the experts tell tables or meta data in their new

us that one key to boosting data warehouse query performance is liberal use of meta data, indexes and

summary tables. Those measures improve response time by doing much work in advance to digest and

organize data for fast retrieval and analysis. In many warehouses, it is necessary to set up one or more summary tables to support each new query or type of query. Such auxiliary data can easily reach three to seven times the volume of the

data marts. Instead, those data marts are loaded mostly with detail data. Less than 15% of our respondents plan, at least the next year, to use an amount of

equal to the vol-ume of detail data. Most repo ed much less summary data. What does this indicate? Many of the data marts handle simple queries - some canned and some ad hoc - 50% to 80% of the time. Although the response times are less than two

Atre, page 72

BUNDLES MAY BE one of the bottest trends in the data mart industry right now, but are the ease of integration and lower price tag enough to convince us-ers that they don't need a cus-

The idea of bundling data nart building products, such as tabases, with query tools and applications hit the man about a year ago. Since then, ost of the major comp such as Oracle Corp. and Sy base, Inc., have jumped on-board with their own bundles. The bundles were designed to save users time and headaches

By Sharen Gaudin

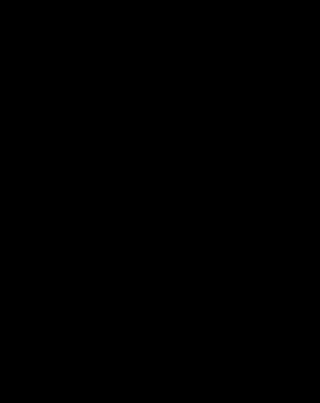
involved with integrating vari-ous products, while offering at much as a 20% discount. Althqugh vendors are wave

bundled data mart value It's low cost, easy integration vs. customization



the flag for a hot, new trend, actual sales may be slow to catch up to the hype. And industry observers say if

the trend is slow to catch on for data marts, the chances of its crossing the line to the heavy weight data wavehouse mark



Data Warehousing

Special Boaus Technical Saction

Briefs Turning to outside warehousing help

 Maintaining project control is important

By Crasz Stedman

A UACK OF internal data warehousing skills continues to force companies to turn to outside consultanta for help. But for many IS departments, consultants are becoming more of a shot in the arm than a warehousing cure-all.

The nature of data warehouses makes it hard to simply call in consultants or systems integrators and then sit back while they develop an implementation for you, according to warehousing process.

information systems managers who have slogged through the For one thing, a consultant probably won't have the intimate business knowledge that is cessful data warehouse. And putting everything in the hands of high-priced outsiders could leave you dependent on them for the ongoing alterations that mevitably have to be made as business needs change.

As a result, several warehousing managers said they are sign ing on consultanta or integrators to jump-start projects rather than have them do all the dries ing for them "It reminds me of an old

saving: 'Give me a fish, and I can eat today. But if you teach me how to fish, I can basically eat for a lifetime," said Frank Brooks, manager of data resource management at Blue Cross/Blue Shield of Tennessee. a Chattanooga-based health in-

Blue Cross/Blue Shield last Outside help, page 72



Plan for data marts

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vance to digest and oreanize data for fast retrieval and analysis. In many ware one or more summary tables to support each new query or type of ouery. Such auxiliary data can easily reach three to seven times the volume of the

source data

In contrast to this picture, a user survey conducted recently by Atre Associates found that most of the respondents don't make much use of summan tables or meta data in their new data marts. Instead, those data

marts are loaded mostly with detail data. Less than 15% of our respondents plan, at least

the next year, to use an amount of summary data equal to the volume of detail data. Most report-

ed much less summary data.

What does this indicated Many of the data marts handle simple outeres - some cannel and some ad hoc - so% to 8o% of the time. Although the response times are less than two

Users not convinced of bundled data mart value

It's low cost, easy integration vs. customization

By Sharon Goudin-

BUNGES MAY as one of the bottest trends in the data mart industry right now, but are the ease of integration and lower price tag enough to convince users that they don't need a cus tomized solution?

The idea of bundling data mart building products, such as databases, with query tools and applications bit the market about a year ago. Since then, most of the major companies such as Oracle Corp. and Sybase, Inc., have jumped onboard with their own bondler The bundles were designed to

some owners time and headaches involved with integrating various products, while offering as much as a 20% discount. Although vendors are waving



We're still in the do-itourselves mode. Wa havan't sicked up on the bundling."

the flag for a hot, new trend, actual sales may be slow to catch un to the hype

And industry observers say if the trend is slow to catch on for data marts, the chances of its crossing the line to the heavy weight data warehouse market Users, page 72

Outside help

tants to help build data extraction routines and desktop query applications when it developed a rame-based data wareouse. But in most cases, the stants "didn't even set on

the keyboard." Brooks said The insurer mostly used the onsultants to get IS staffers up to speed on the warehousing tools it chose. Brooks needed six people to meet his deadline for ing the extraction programs that feed the warehouse,

and the cost of doing that with consultants \$1,500-per-day "would have been astronomi cal." he said. "And then they would have left with all the

Drug. nc. in Pittsburgh learned its lesson the hard way several years ago. At first, the drugstore chain signed up Sequent Computer Systems, Inc.'s consulting unit to develop a data warehouse with minimal participation by Thrift employees.

But the consultants didn't fulby understand Thrift's business processes, which led to a wareouse loading nightmare when some store sales data unexpectedly showed up a day or two late. All the daily sales summaries had to be updated, a step that stretched the loading process

beyond the allotted window. "Our lack of CONSULTANTS involvement caused some of the problems," said Beth Mollica, information warehouse p ect manager at Thrift, which was merged into Clearwater. Fla.-based Eckerd Corp. last

> association of corporate warehousing integrators and opera

> tors, said another factor that

keeps bundles out of the ware-

housing market is the higher

cost, compared with data marts

The price of a data warehouse

can reach seven figures, where

After the problems came to Gaithersburg, Md. For example, Owens & Minor Inc. in Glen Allen, Va., put IS tute. a Gaithersburg, Md.-based

light, Mollica and other Thrift IS methodology," said Don Stoller, employees started working with manager of decision services at Sequent consultants "as a tram, Owens & Minor, a distributor of cally attaching ourselves to medical and surgical supplies. their hips," she said. "We be-Without the teaming, came accountable." wouldn't have been able to gain Turnkey projects still aren't unheard of But as more data the skills to do this on our own

going forward," he said. warehouses get deployed, com panies are finding that perpetu-EXPERTISE WORTH COST al tinkering is needed to keep MCI Communications Corp. nery speeds from bogg ases consultants heavily on data down. That is pushing more IS warehouses and other IS proj managers to get involved with consultants up-front in "the dirty work of database design. said Alan Paller, director of research and education at The Data Warehousing Institute in

> Denser facility. But the consultants typically usment and train MCI staffers and most aren't left to their own code-writing devices. "Unless consultants really know your data, whatever they build for you is probably going to be wro out of the cate." Grim said. *

Corp.'s data extraction software and Business Objects SA's que "We had the business knowl. as the cost of a data mart is genedge, and they had the design

warehouse that went live this

spring using Informatica

ry tools erally in the low range of five Atre: Plan CUSTOMIZATION EXPECTED

> minutes for a large share of the queries, several managers n ported a high proportion of simple queries with long response times, often more than ao minutes. For complex que ries, that wouldn't be good; for simple quenes, it's abvernal especially with the robust hard ware that many respondents employ. To bring more query

response times below two min utes, several managers plan to add summary data and increase the percentage of canned gue-

PAST GROWTH EXPECTED The survey shows that many of these data marts were built quickly, in three or four men Most managers project rapid

growth, at 100% or more yearly, over the next two to three years. If you read between the lines. it looks as if many organizations have found the same shor Get a data must in place as fast as possible, then address performance issues and build queries

later. To me, that suggests that users built the data mart before they knew what they were point to do with it and what queries were needed. That, in turn, sue prets either that planning didn't receive enough attention or that IT was uncertain as to how to gather requirements for data mart queries.

ects. Outside developers and database administrators with warehousing skills can speed up projects enough to make their daily fees of \$400 to \$1,200 per day palatable, said Chip Grim, director of sales sys tems development at MCI's staffers and consultants togeth-er in one-on-one development teams for an Oracle Corp.-based

usually has to go through sever al revisions to set it right."O

I would guess that, for many of these organizations, a pilot project with generic functional CONTINUED FROM PAGE TO ity became, without much additional function, the production

> That sin how difficult it can be to design. a data mart, given that end users often don't know their query needs until they work with a data mart live. What's the solution? Generally, you oced to make an extra effort to pin down amorphous requirements by seeking more user feedback through planning. prototyping and piloting. That gives you material for a design hat goes beyond the generic

Data mart design should be business-driven. Organizations often keep their first data mart small to lis it the technical challenges. That makes it feasible to build quickly. But if you aren't careful, the simplification of the technical challenges can lead you to skimp on planning. You need to find out what the end users want the dats mart to do and de liver as many of those capabili-

ties as you can, with good performance, before the system is out into production. O Afre is president of Afre Associates Inc., a consulting firm in Port Chester N.Y. that mericlines in data warehousing and detabase technology. She can be reached at (914) 939-0045 or by E-mail at eku@atrr.com.

Users not convinced

are slim, at least in the near fudoor-clothing sales. That same ture. But some users said they mpany's data warehouse wish vendors would bundle data warehouse products with extracerything from clothing sales to tion took to make the buying and integration processes easier. Data mart bundle users were hard to find.

"We're still in the do-itourselves mode," said Dave Lingren at Dunsgate, the New Yorkased information technology ision of Wall Street powerhouse The Dun & Bradetreet

"I'm constantly fighting the battle of finding the right tool at the right - marketing, sales, CEOs

cost and hoping it works with the other tools I've bought."

- Mark Bellarie. Pacific Gas & Electric

> Corp. "We haven't picked up on the bundling. We buy the products specific to our projects, and we put them together ourselves. We don't see the value in ience," Lingren added. We're more likely to buy a selection of products rather than a bundle because it gives us controi. That's what we do. That's

our value-added to the project. CUSTONIZATION PREFERRED Lingren is like many information systems managers who would rather customize their data mart than save time - and usually money - by buying a more generic package.

A data mart generally is a small-scale, task-specific version of a data warehouse. A retail company, for example, would build a data mart to track out-

emore, shipments and the sale of all other products. Neal Mendelson, senior director of data warehousing at Oracle, said the bundles are for users who want to get the system up and running quickly. "IT demartments are shrinking more

and more, so they need something easy to install, easy to get up and running," Mendel son said. "They need a solution that non-IT people

> can use Pam Whitmore, director of data warehousis solutions at Sybase, said the company's QuickStart

DataMart bundle was de signed for case of use These products have all been tested to make sure they work well together," she said. "The customer doesn't have to choose and then worry if they'll integrate well. They save money on that cost of trial and

Whitmore wouldn't give sales figures on the QuickStart Data-Mart, but she did say sales have

been slow to get started. Mendelson, who declined to give sales numbers, added that what makes data mart bundles

attractive also keeps them from being an attractive option in the data warehousing market, "Duta warehouses drive the business," he said. "These projects are very complex, longer term and don't lend themselves as easily to packaging. It's a process more than a product." Richard Rist, vice president of The Data Warehousing Insti-

When a company is paying that kind of money for a data warehouse, they're going to want a customized solution Rist said. "They're not come to be interested in saying, Well, that package is close enough." Yet Mark DeNarie, energy

management systems operations supervisor at Pacific Gas & Flortric Co in San Francisco said if there was a little more bundling going on, his costs might be lower. I'd like to see that, definitely," said DeNarie, who uses Oracle products for his data were

house. "They're dangling that cost carrot. They don't want to give you something at as% of what they're getting now. There's no impetus out there to do that "There was more incentive for vendors to jump onboard with data mart bundles because the price tag for marts

is lower and the tools needed are fower charmes said DeNarie also said a hundle of data warehousing products. along with querying tools and

applications, would save him a lot of the time he spends configuring and integrating his system. 'There's got to be easier ways to configure," he said. There are so many separate products in there. I'm constantly fighting the battle of finding the right tool at the right cost and hoping it works with the other tools I've bought." [3]

Red Brick Warehouse 5.0 vs OracleLate

Data warehousing is today's most critical database application, but data warehouses have specialized RDBMS requirements which cannot be served by aging, overweight architectures originally designed for OLTP [on-line transaction processing) databases.

Data Warehousing Features	Red Brick Warehouse 5.0	Oracle8
DSS-optimized architecture	YES	NO
	YES	NO :
	YES	NO
	YES	- NO
	YES	NO
	YES	NO
	YES	NO
	YES	NO

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Banchmarking Partners February 1997 "J.D. Edwards' vision of 'Internet everywhere' will make it easier for users to integrate their companies and their supply chains." Hurwitz Group February 1997 d.D. Sowards component architecture delivers a quick and elegant solution to the problem of deploying dere applications across the Internet.

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JD**E**dwards

Year 2000 advice: Punt! Don't try to salve your millernium problem. Accept defeat and install a new infrastructure, Peter G. W. Keen writer from \$4.

Managing

When the going gets tough and stressful, it helps to loosen up the IS shop



LET'S PARTY!

By Kathleen Melymuka

n the IS department at the Washington headquarters of brought to the office). "Laughte the American Association of Retired Persons (AARP), for what alisy ou day to day. There averyone's been working too hard.

Nerves are frayed. People are getting testy. Tempersflare. Suddenly, a gity jumps up and shoots his co-workerwith a Super Soaker water gun. His colleague pulls out her plastic piece and returns fire. The rest of the staff joins in. The tension evaporates into gales of laughter and indoor precipitation.

"Stress and burnout are no small issues in the IS work-

place," says Jeanne Simia, AARP to tor of information systems/customer service (and brought to the office). "Laughte for what alis you day to day. There are sayriad of things you can do to inject a bit more fun into your workplace."

Fun may be more important than it's given credit for 'Quality of work life is much more important than mone,'' says Ann Vincola, national director of work life consulting at Coopers & Lybrand in Boston. "Studies at Du Pont, Merck, Johnson & Johnson and Xerox have definitely told us that people who have a better quality of work life do a better

razzled? page ?

everything. That's why I can't afford for my business lines to go down. Not even for a minute. But with GTE, I never have to worry about dropped calls. Their World Class Network' is 99.9% reliable. And that means a lot to me. Because I really don't want to be stuck with a boatload of Irout. I mean, I like fish – but not that much.

In the fish business, fresh is

GIB

IT'S AMAZING WHAT WE CAN DO TOGETHER

FRAZZLE LET'S PARTY

job, are more committed and stay longer Statistics from Computerworld's 1997 Job Satisfaction Survey [CW, May 26] indicate that IS staffers can use a little fun. A large majority of the 503 IS managers and professionals surveyed described workdays as "very

essful," more so for senior and middle managers. One of the fastest, easiest and least expensive ways to ngeove the quality of work life is to help your people en up. Simia, for example, appoints a "corporate jester" to find and circulate computer jokes, cartoons and funny articles. Oversized "need humor" cartoadorn her depurtment walls. Bulletin boards are filled with candid snapshots of IS staff with goofy captions supplied by co-workers. When things get particularly

se, water gun shoot-outs might break out. The biggest thing is you get people through the uncertain times, the crazy times, the times when you get so inundated. It forces people to laugh at themselves and blow off steam," says Simia, also known as The Queen in an office whose other employees include Strawberry.

Big Shoe and The Claw. "We joke around," says Ida Blake, a computer techni cian in the AARP training division who is mostly known as Princess."My supervisor is Big Zoo. It's just fun. We keep things upbest

beat is the name of the game at Southwest Air Co. in Dallas, where zaniness flows from Chairman Herb "No One Ever Said Business Had to Be Serious Kelleher to virtually every department, "We've done things like decorate the cubicles in New Orleans style and have a Mardi Gras," says Bob Rapp, vice president of systems at Southwest

"As a departmental fund-raiser one year, people could throw water balloons at my face," Rapp says. "We had a big turnout. My first Halloween, they had me dress up in tights. It's not a pretty sight, and I remember telling my wife. This is what my career has come to." Although Southwest's IS employees chuckle at the

shenanigans, they reserve their highest praise for the heart behind the hilarity. "The first thing that impressed me when I came in the door was the camaraderie," says Jaime Ibarra, a systems engineer at Southwest for three years. "I can talk to anybody, from people in the airport to Herb, on a personal basis. People here are willing to go the extra mile to help you. It may sound hokey, but there's really love among the people here."

What love and zaniness do for Southwest, spontanes and music do for the folks at Taproot Interactive Study a Chicago multimedia development house, "We work damn hard, but we have a pretty loose environment," says manager Curt Galusha. "I've scored tickets to a baseball game and loaded everyone into a bus and said, 'Come on, were going,' Off-the cuff actions are fun and keep everybody fresh

Galusha also has found that music hath charms to mothe the payage IS worker. "For some reason, we're all

fairly musical here," he says. "Everyone is in a band or a wanna-be band, so almost ev eryone has a guitar or a keyboard or som drums stashed under the desk. Occasional ly, right in the middle of the day, somebody will plug in the guitar and start ripping e stuff off.

Music also works for Simia, who has retablished an IS chorale that sings in the

music. "We do a retreat," says the pres dent of Tech-Teach International, Inc., a provider of

technical training seminars in Arlington, Va. We get a bunch of beach houses in North Carolina ed do miniseminar things, but not like those 'Dilbert

effective team builders is karaoke. The nice thing about karaoke is everyone's a little inebriated, so you can alnave claim that you don't actually remember that you were there. But if you're singing backup, it becomes a

Minasi suggests a novel boring jobs: a big board listing "This Month's S_t Jobs." "Everybody ets a certain number of ad-job avoidance cred its at the beginning of the year to use any way you'd like. When you've ed them up, you set

Regarding tear

lobby at Christm Mark Minasi swears by another type of

seminars where they have to use two by fours to build a bridge," Minasi says. "We've found that one of the most

Richard Baynard pulls ahead of Alan Harbaugh (right) and Adair McConnell

their places, says Daniel Eckert, director of technology at WinkComm, Inc., a builder of online commerce sys-tems in Hoffman Estates. III. "But the best way to mod-vate geeks is to give them toys." he says.

They like to have toys on the desk - Toy Story toy Mr. Potato Head is always required on at least so one's desk, Star Wars characters. One guy built models of all the [Star Took] starships and hung them in his fice," Eckert says.

"Real program ners are always into sci-6 movies. In the middle of the day, we'll just shut down and go see Star Wars or something. We work 50- to 80-hour weeks so taking two hours in the middle of a day doesn't both er us," he says.

When it's been a long day, Eckert knows just what his geeks need for a break. "If they've been coding eight or to hours, and it's eight o'clock at night, they light up a

user game," he says. "They're huge Doom players, and they have their own clan and Web site," he says. "They spend their free time playing Doom. They don't even want to move from their

> "Yeah, toys are big," Eckert says. "In fact, one of our guys, if it's been a bad day, will get on his motorcycle and disappear for two hours and take his pager with

"Actually," Eckert says, "that guy's me." D

switter in Dusdoure, Moss.







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MANAGER'S SOURCES: IS BOOKSHELF

The Digital Estate

McGrau-Hill, New York: \$24.95, 217 pages

By Leilani Allen

This is the book for all of those senior esecutives and managers who have heard about the Internet and still just don't get it.

Martin is employed at IBM. He previ-ously published Interactive Age and is closely linked to Digital Economy author Don Tapacott's Alliance for Converging ogies. To some extent, this book is an outgrowth of the earlier effort.

The theme is that the Internet is transforming the ways companies do business, especially as they move from first-generation information sites ("brochureware") to transactional sites where commerce takes place. The new business model of electronic commerce that emerges is one of constant and iterative learning, companies willing and able to

reinvent themselves at the drop of a hat, an obsessive focus on the consumer not just as a revenue source, but as a community of ideas - and an everexpanding and limitless marketplace.

The book effectively describes the digi tal estate subculture, chock-full of exam ples and filled with comments from venty- and thirtysomething busi leaders who passionately believe they're part of a true revolution in bus They thrive on a business reality of transitory products, services, partnerships and competitors, all moving and changing at the speed of light. In the digital es-tate, this "living on the edge" thrill drives the amazing inventiveness and creativity of those who are banking their futures on

TEACHING TOOL

If we take away the glitz and hyperbo what lessons can this emerging world of commerce teach us? The most intriguing are its definitions of "customer" and "see vice," which go light-years beyond what most corporations are thinking today The new model demolishes the idea of



cing it with ev ent. res ventive ways of presenting information wers consumers to define their that emp own needs and set their own answers.

not the packaged solutions of yesteryear The greatest value of this book is in lving the mystery of why so many established companies can't make money on the internet. The digital estate subcul-ture, in which there is often an impercep , tible difference between technologist and marketeer, is alien to corporate America. Much of that business model isn't likely

to land on your doorstep anytime soon. That's just as well, because most 15 dertments aren't well-positioned to play a leading role in the evolution. IS man ers need to consider just how they cou reposition information from legacy systerns to support electronic commerce They need to consider how they would have to transform their development pro cesses from today's measured approach to the "warp drive" cycle times that the derstand the new model of user interaction, which includes concepts such as harvesting, herding, splash, bound dogs, repurposing, dickitis and so on. They need to evaluate whether 'net-surfing employees will demand similar inter ces on existing business systems.

Most of all, they need to accept a world

where technology doesn't just support the business, but is the business. [3] Allen is a Computerworld columnist and a director at Tenex, a management consulting firm in Burlington, Mass.

TOP

WEB SITES

By Lettie Goff

puter News Dally

nytsyn.com/live/Latest/ Make this part of your morning surfing routine for quick access to the major computer news headlines from relevant newspers around the country. For example, a nno Computer Corp. am is likely to be covered by a

reporter from the Houston Chronicle who follows the locally based PC maker. Vendor news, new prod

uct developments and user rws are all included. Although you can link to the original source, all the artcles you need are here in a self-contained space for convenient access. When you have the luxury to linger, check out the special section on Microsoft Corp.

CEO Bill Gates, participate in the ongoing discussion groups or peruse the news archives by category. A search engine also

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Cable Datacom News.com /current.htm

Keep an eye on this site to keep up with the ng market for cable modern access to the Internet. Cable moderns have the

potential to replace Integrated Services Digital Network and other forms of high-speed data services for small-office/homeoffice users, including telecommuters and, possibly, corporate Internet access. You users will likely ask about them the next time their all BY his last moderns discon-



nect unexpectedly from the Internet, so check here for the lowdown on vendors, service providers and the latest news and developments. Standard features include a useful list of frequently asked questions, a complete listing of cable modern trials across the country and links to relevant vendor sites.

Goff is a freelance writer in New York

JULY'S CONFERENCES

For a complete listing of 15 conferences, see @Computerworld's events calendar at www.computerworld.com/toolbox/conferences.html.

a The National Center for Database Marketing '97: Strategies for Success. Chicago, July 23-25 - Leading-edge examples of making money off databases from the marketer's point of view. Contact: Cowles Busi ness Media, Stamford, Conn. (800) 027-5007.

a Darwisch Intranot/Web Strategies for Engineering and Mass tacturing *97. Los Angeles, July 28-30 — Computer-eided design and man ufacturing's top boutique market research firm checks out the World Wide Web. Contact: Thomas I. Graves at Darretech. Inc., Cambridge, Mass. 1619) 114-2110: E-mail: derntech@daratech.com.

a Object World West. San Francisco, July 20-25 - Understand applica tion development in a net-centric corporate environment. Contact: Softbank/ Comdex, Needham, Mass. (617) 433-1500; E-mail: sci@comdex.com.

a DCI's Date Warehouse World and Sales Force Automation Con-Seronce & Exposition. New York, July 20-11 -- Contact: Digital Consulting, Inc. (DCI), Andover, Mass. (508) 470-3880: E-mail: ConfRef@

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YEAR 2000: GIVE UP. MOVE ON - NOW



on't even try to solve the year 2000 problem. You can't fix it, and the cost of trying will put your firm's infrastructure at risk. Accept defeat. Dump your old infrastructure, and get one that's year 2000-safe, even if it isn't perfect.

and maybe even your cor The essential role of the IS organization is to guarantee the integrity of corporate IT infrastructures. Everything else - application development operations and support — can be handled, in part or in whole, by external sources or other in ternal IT groups. Integration of networks, information warehouses and process flows can't be handled piecemeal. When they are, the later costs of repairing multirechnology chaos grow exponentially. Of course, it's IS that has to pick up the pieces

structure fix-up business for many years That's the good news The bad news is that we can forget about infrastructure development for the foreseeable future. The year 2000 crssis almost guarantees that. Year 2000 is like a massive penalty tax that slashes the discretionary budget by 25% or more. IS budgets are already too small to meet business needs for new applications That's apparent in Computenantif's recent annual job satisfaction study (May 26), in which 80% of IS are. fessionals reported their jobs were stress-

IS organizations will be in the infra-

Do it now to save your IS organization full and 41% stated their job satisfaction was decreasing. Internet, intranet and extranet investments have to come out of an already overstrained staff and money resource base, and as the survey shows. IS is under siege. Year 2000 slashes the resources and wrecks prioritization Infrastructure gets wiped off the prior-

ity list in that situation. There's no way executives will sanction proposals for that context. That means 15 won't be able to sovest in what the business must have for the longer term; efficient consumer response, electronic commerce, data warehousing/mining business process re-whatever it's called this week and supply-chain management. All of those rest on an integrated enterprise IT platform. On top of that, there's the growing complexity of keeping thousands of desktop users content, their software undated, all the servers humming and the viruses killed off

IS managers and professionals had better come up with creative ways of designing and sourcing infrastructure proects. The best strategy is to turn the year 2000 problem into the infrastructure solution. The problem is far worse than even the pessimists believe Gartner Group's much-cited figure of \$600 billion to fix it is misleading. If God or Bill Gates wrote out a check for the full amount, nothing much would change The year 2000 problem is a people- and time-resource issue, not just a financial

one. You can't buy the time at any price. Accept the year 2000 defeat now. Go for a clean, new infrastructure as fast as possible. Dump what you have and implement a comprehensive capability that's already year 2000-safe. Options include SAP's R/3 - notoriously complex and clumsy, but for many firms the best way they can back into integration - and Oracle's template approach to application development based on a sound database infrastructure. Above all, there are the four components of corporate Internet/intranet computing, TCP/IP for solving the telecommunications infrastructure problem, hypertext for limited but adequate data antegration, the browser as the first major user access and procedure tool in which there's no need for training and the server/firewall as glue

My message to IS executives and pro fessionals: The real calamity ahead won't come in 2000 but in 2001, when inexity ness, banking, supply chain and government landscape are compounded by missing new infrastructure, more job stress and more overload in fixing wornout components of today's IT complexes. IS won't survive as a profession if this occurs - we'll see the biggest wave of outsourcing and purging ever.

The business-technology alignment that the field has worked so hard to create will be dead. Don't let the calamete bannen. El

Keen can be contacted at www.polerkoen com. His new book. The Process Edge: Creating Value Where it Counts, was published this month by Harrard Bunness

A 'True Confessions' for IS

verybody knows they're out there: those ugly, messy IS disasters that shred budgets, es and careers

If only we could get the inside story on rhat went wrong, we could — maybe — wold the same fate ourselves. That's the idea behind failure of Les.

Monogement, a new quarterly journal from Cognizant Communication Corp. in Elmeford, N.Y. In it. academic researchers examine information systects that failed to deliver results. and determine how the project got of track and the lessons to be learned from

the failure

The first edition exact among others, the U.S. Food and Drug Administration's attempts to streamline its drug-approval pro cess through document management, and an electronic trading system at the London Stock

famic style, but deal with nittytty issues such as poor report. tructures, changing system re-

ents and even the effect . "fore. based culture" has on a development

Editor in Chief Jay Liebowitz, a profes sor in the department of manager science at The George Washington University in Washington, says he already has enough failure stories to fill his next two issues. He notes that his offer of

anonymity helps make subjects more cooperative Cognizant Communication Publisher Robert Miranda says about 200 people have signed up for subscriptions, which

start at \$70 per year. Cognizant can be reached at (914) 592-7720 or via electronic mail at

cogcomm@aol.com. Liebowitz can be reached at (202)

- Robert L. Scheier

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Buyer's Guide

Computerworld and Gliont/Servin Labe Pouttum Pre

Double play!

NE POPULARITY OF INTRANETS IS raising the performance bar for workgroup servers. These machines must do more than just provide access to data and images inside and outside of relational database systems. They are also required to carry out these duties by speaking the language of World Wide Web browsers to communicate with their clients.

The current crop of dual-processor PC servers based on Intel Hewlett-Packard and Dell topped most of the

intranet tests, although NEC pulled ahead when price/performance was considered Corp.'s Pentium Pro chip are increasingly being utilized as intranet servers for workgroups within large organizations and at entire smaller companies. As a group, these machines seem to do a good job of hosting an intranet with up to 560 cilents. But when the load reaches 480 cilents, performance falls off dramatically.

To address the requirements of intranets, we tested four similar Booble play, page 88

By Garrett Michael Hayes





dual-processor Pentium Pro systems: The PowerEdge 4100/ 200 from Dell Computer Corp.; the NetServer LH Pro from Hewlett-Packard Co.; the PC Server 330 from IBM: and the Express 800 LE2000 from

NEC Computer Systems Division. They were selected as representative of the dual-processor Pentium Pro marketplace. (Compag Computer Corp. declined to participate.) The sys-

tems were tested running Client/Server Labs' IntraMark1 benchmark, which measures performance by simulating a mixture of the most important types of Web server requests (See "How we did it" below).

Results

e network functions as a

The servers we tested kept up with the demands of 120 simulated clients, but none carried the weight when we tried to simulate 480 clients. Three of the four - HP, Dell and NEC - handled 360 clients, and IBM met the demands of only 240 clients

before performance fell below 95%. HP's NetServer LH Pro turned in the best overall result with a final score of 1.401 at 360 clients, but Dell's PowerEdge 4100/200 was hard on HP's beels.

The NEC Express \$800 LE2000 remained in the pack with its overall score, but then it pulled ahead of HP and Dell in price/performance. IBM's PC Server 330, placed last in both performance

and price/performance. Suitability

Our testing indicates that the dual-processor Pentium Pro workgroup-class servers as a class can definitely keep pace with the demands on an intranet for fairly large workgroups. But the performance of the individual systems varied significantly as the workload increased.

In the final analysis, the NEC system clearly represents a good value for the price. That said, the HP and Dell systems turned in substantially higher results than the other systems -- commensurate with their higher prices. Users will need to decide for themselves if the

difference	NEC SCORES WITH LOW PRICE			
in the price/ perfor-		Score/number of clients	Price	Price/ performane factor
mance fac-	1864	1,157 / 240	\$14,123	509
tors are jus- tified by the	HP	1,490 / 360	\$15,560	290 .
added fea- tures of	DELL	1,448 / 360	\$14,546	279
each sys-	NEC	1,141 / 360	\$9,656	235

HOW WE DID IT

The test

ability of each system to handle the demands placed on intranet servers by testing them with Client/Server Labs' IntraMark1 Each virtual group simulta-neously creates five classes of

For this comparison, each of the machines was equip with 2569 bytes of RAM, dual 200-MHz Pentium Pro proces sors, trak bytes of write-back carbo -- the NEC system was delivered with a 56K bytes, but a 512K-byte NEC system is avail-able — a 10M/100M bit/sec. Peripheral Component Interconnect (PCI) Ethernet ada 8G bytes or more of disk storage. Each system ran Microsoft Corp.'s Windows NT 4-0 (Ser-

acle Workgroup Server 7.3 as the databose engine. Each server was connected to a rooBase-T Ethernet backbone and the load simulators were ected to a roBase-T switch The IntraMark1 stresses a complete system with a combi-nation of traditional Web content and more involved database access requests. Custom 3a-bit client software performs the

vice Pack a), with Oracle Corp Web Server 2.1 postware and Or-

b browser, simulating a co Hypertext Markup Language ex workload. Multiple "virtual (HTML), graphics interchange ents" operate as a "virtual format (GIF), decision-support group" on a single Windows NT system (DSS), online transacimputer, making independent tion processing (OUTP) and bita requests of a Web server. nary large objects (Blobs) re-

load during the test. They are

trieval. The Web server software

nautes the database requests to a

HP AND DELL WIN MOST CATEGORIES

relational database using Com-mon Gateway Interface scripts GIF clients) for each NT work station enabled in the test. Each and returns the results to the Web clients.

A standard IntraMark1 test simulates one group of 40 virts al clients (one OLTP client, three DSS clients, four Blobs retrieval

Each request is cou the total compared with the count of failed requests. A "su clients, 16 HTML clients and 16 cess ratio" is calculated for each workload, and the geometric ean of those ratios is the Intra

dark1 result for that load. Scaling stops when the error rate meets or exceeds 5%. The final IntraMark1 score is the highest result to that point, along with the client load at

ekstation executes a group of

requests. The musis load is 1,920 simulated clients

which that score was achieved Finally, we divide the cost of the system by the product of the final IntraMark1 score and cli-ent load, then multiply by to,000 to yield a price/performance factor. For example, for a \$10,000 system that scored 800 at 240 clients, the price/performance factor would be 520, cal-

culated at 10.000 x (10.000/ (\$00 x 240). U at Client/Server Labs, Inc. in Atlasta, a primary test partner of

CLIENTS					
120	240	360	480*		
HP	Dell	Dell	HP		
(426)	(680)	(1,010)	(1,052)		
Dell	Dell	Dell	Dell		
(563)	(913)	(1,155)	(1,132)		
HP	HP	HP	HP		
(676)	(1,012)	(1,456)	(1,365)		
NEC	HP	HP	HP		
(1,450)	(2,953)	(2,746)	(2,280		
NEC	HP	HP	HP		
(1,525)	(3J04)	(2,772)	(2,259		
Dell	HP	HP	HP		
(771)	(1,284)	(1,991)	(1,503)		
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PowerEdge 4100/200 Dell Computer Corp. Austin, Texas /(800) 432-2789 www.dell.com

\$14,546

NEW DESCRIBING the internal structure of Dell's PowerEdge 4100/200 our lead hardware technician wrote simply, "Room for a game of Frisbee - best of the bunch."

This substantial system has three Extended Industry Standard Architecture (EISA) and five PCI slots on a large, vertical system board. The chassis features more than enough room to accommodate the most ham-handed of technicians. In a nice touch, the ribbon cables are marked with highly visible legends that indicate which end con ts to which device, including the SCSI cable from the dual channel PCI Ultra SCSI-a controller to the six-drive array. The hot-awappable drives in the array can be mounted and dismounted from the front with key/lock access control, but the locking

mechanism didn't feel particularly substantial Included with the system are a "Server Assistant" CD-ROM. which provides system utilities, diagnostics, drivers and docu-mentation; and a copy of Intel's LANDesk Server Manager for

advanced systems administration. With Dell's asking price of \$14,546 for the configuration we tested, and an Intrascore of 1,449 at 360 clients, the PowerEdge 4100/200 earned



Raleigh, N.C. /(800) 772-2227

HE THM PC Server 230 is a solidly built system with few

frills and good expansion potential. Like NEC's system,

it was configured more like a large tower system than a

sign challenge. Unfortunately, there is some awkwardness in accessing boards for re-

pair work even after the case and its six thumbscrews have been removed. The SCSI,

The five drives in the main bay on our test unit were easy to get to, but reaching the sixth drive required removal of an internal subframe held by several additional screws. The system comes with a Server Guide CD (which can be used to help install the

er cables and a plastic shield across the power supply hinder access.

Providing eight expansion slots (three EISA and five combined EISA/PCI) along with 10 drive bays in this size package was undoubtedly a de-

PC Server 330

onal server,

www.pc.ibm.com/servers

IBM PC Co.

\$14,123

Version A.L.

a creditable price/ performance factor of 279 points. It didn't quite match HP's numbers, but Dell's overall perfor mance is close, and it nosted better DSS and OLTP results up der the high client

NetServer I H Pro

Hewlett-Packard Co. Palo Alto, Calif. /(800) 322-4772 hp.com/go/netserver \$15,560

EWLETT-PACKARD'S NetServer LH Pro was the most costly server we tested. But HP has never been known for playing the "low ball" price same, and some of the reasons for the cust soon

become apparent when we examined the hardware. Beiides its physically imposing design reminisce of much larger systems, the NetServer LH Pro boas features such as dual power supplies (as did the Dell machine), dual integrated PCI fast/wide SCSI bus and six front-mounted, hot-swappable drives in an ar-



ray that supports RAID Levels 0, 1, 5 and 6. Our hardware technicians were impressed by the thun screw assembly, combined with the presence of a case lock on the back and a drive lock on the disk array.

Attention to detail showed when we opened the case and found both a diagnostic disk and spare SCSI cable mounted to the frame. Also, each hot-swappable drive bears a label with the Web address where users can find support and configuration

On the software side, the LH Pro comes with a bootable CD-ROM called the HP NetServer Navigator. It provides config nization utilities and a copy of HP OpenView for Windows

The LH Pro turned in the highest IntraMark1 score in the mparison, with 1,401 at 160 clients. It still reflects its higher cost, garnering a price/performance factor of a98. Even so, larger shops may want to opt for HP's higher num

PRODUCT

Double

Express5800

NEC Computer Systems Division Boxboro, Mass. /(800) 709-3434

www.nec-computers.com \$9.656

ESPITE THE FACT that the Express5800 from NEC was the only system configured with just a56 K bytes of on-chip cache (a 512K-byte model is available), it still turned in respectable performance figures. Its IntraMark1 score was 1.141 at 160 clients. The lowest-priced system in the group, at less than \$10,000, it earned the best

price/performance factor of 236 points. For that price, the buyer gets a comparatively small server imore the size of a workstation tower) with only moderate expansion capacity suited for those whose growth needs are limited. There are eight expansion shots in the chastis (three EISA, four PCI

and one shared) There were four SCSI disk drives in the unit we tested, mounted in a swing-out cage. All four drives are connected to the integrated PCI UltraWide SCSI con Our hardware technicians found the cage design easy to work with for disk and board access. The only negative we found in the hardware design was that, although it was very easy to dismount the processor board for repair work, it was too easy to place

the board back into the chassis without seating it at all. We expect this operation to be rare but impor-tant when done. (Note: This system also is available under the Zenith Data Systems label as the Z-Serv-

er LE2000.) In absolute terms, it was third in the pack, but the NEC server had the smoothest performance curve. As workload increased, its performance neither rose nor fell as dramatically in any category as

the other systems That seems to make it a good candidate for the smaller group that wants a solid performer it intends to set and forget.

Double play, page 94



network software) and IBM's NetFinity software, which provides systems configuration and management support. IBM also includes a free copy of Lotus Notes Server Of the systems we tested, the PC Server 130 was the third most expensive, coming in at \$44,123. This price, combined with the fact that it was able to sur-

port only 240 virtual clients in our test, gave it a price/performance factor of 509, by far the highest of The most striking element of the 330's perfor-sance was the sharp fall-off in its ability to handle bu-

sic HTML and image requests as the client load in-

At a 40 simulated clients, its database response remained comparable to the others. But its HTML and image response fell dramatically, dipping so far that it wer than any of the other systems, even at the higher level of 360 clients.



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SNEAK PEEK

Pentium II servers should reach 300 MHz within a year; Microsoft's Wolfpack clustering technology should come together in stages

> By Amy Mallov

EXT STOP: 300-MHz Pentium II servers that can be clustered under Windows NT to compete with RISC-based machines. This scenario may seem far removed from the prevalent 200-MHz Pentium Pro single-server environment of today. But analysts say it will come

to fruition some time next year.

Intel Corp.-based servers are on the verge of major improvements, partially because of increased speed, but also thanks to
clustering technologies. Computerworld spoke with four analysts
to gather projections and buying advice in areas of performance,
scalability, service and support, and orticine.

Pentium II ents are just on the horizon for Intel-based servers because of the recently released Pentium II ssor. Although PCs with Pentium Its are out now the majority of Pentium Il servers won't be out until this summer when a new version of the Pentium II with Error Checking and Correcting memory arrives, according to Intel. The Pentium II offers speeds that range between as MHz and a66 MHz, but the Pentium Pro performs only at speeds of up to 200 MHz. "For the most part, the Pentium II will replace Pentium Pros in dual processor servers," says foe Barkan, a research director at Gartner Group, Inc. in Stamford, Conn

in Stanford, Conn.
Four way revers and up will continue
running with Featurus Pro processor.
Lecause the Frottum II can cale up to
only two processors, says Feet Cowbez,
sensor analysis at Dataper InformaServices Group, Inc. in Lesington, Mass.
That will be the case until a new version
of the processor, code-suraned Decchure;
of the processor, code-suraned Decchure;
ording to analysis. That architecture will
scale up to four processors and will perform as speeds above too MHz, Lowber
form as speeds above too MHz, Lowber

Those who buy servers during the second half of this year should ensure that windors will provide upgrades to the Deschutes processor if it is available. Barkan says. He says he espects vendors to offer that canability.

Wolfpack Performance boosts are going to be cou-

pled with new realability of the garphed with new realability of the garticles are described to the garsis new described to the garsis of the district of the garticles of the garticles of the garpts of the districtivent compating group at Datsquest in San Jose. Calif., says clustering will really take off once Microsoft Oray's Wolfpack is available.

Microsoft is perainting to release Wolf-Microsoft is perainting to release Wolf-

pack, which is the vendor's clustering technology for its Windows NT Server environment. Microsoft announced the project in October 1995, and Wolfpack was scheduled to come out in the first quarter last year. Now it is scheduled to

appear this summer.
"The first version [of Wolfpack] this

summer will be no better than Unix was in 199n." Lowber says. Although Unix 100dy; can support only the sight servers, Wolfpack will support only two initially. Lowber says. Under the first version, Wolfpack, there will be fail-over, which means that if server: "A" goes down, serv- "B" will take over the wockbad of server or "M". While both servers are up, each one will process its own workload. ""Microsoft has an arrow pointed at the

heart of Unix. They want it dead. They need to start tying these [Intel servers] together, so they can compete better with the Unix crowd," says Brian Murphy, director of client/server research at The Yankee Group in Boston.

The second phase of Wolfpack scheduled for release in 1998 — will be load-balancing, Murphy says. Load-balancing provides a way to monitor all of the resources in the cluster, making it possible to prioritize the work-

load, according to Lowber. If a server fails, less important applications can be dropped out, providing additional computing power for the most important applications, he explains. Chatering provides high availability. Each server has its own operating sys-

tem, memory and workload.

But symmetrical multiprocessing (SMP) systems aren't leaving the some.

Sheridan says there will be an increase in the number of processors in an SMP

configuration.

Advanced Logic Research, Inc. already offers a six-way system, and NCR Corp. is about to ship a 10-way server.

Storage

Performance boosts and increased scalabuilty will also come from other technolony improvements. For instance, Fibre Channel, an American National Standards Institute standard, provides a way to interconnect systems or storage systems. Currently, storage systems for Intel-based servers attach through SCSI controllers, which gets messy when us ers increase disk capacity because of the number of cables involved. Lowber save Fibre Channel is much faster and easier to configure, in part because users can configure servers in one room and storage in another room. Lowber says. Fibre Channel can cover longer distances than SCS1. Compac Computer Corp. is scheduled to have a Fibre Channel storage so lution offering this summer, accordi

Lowber. Compaq is "typically the first to market in terms of getting solutions out there," be says. Barken mentions a couple other offer-

Barken mentions a couple other offerings that will improve scalability and performance.

According to the 1sO Special Interest Group, performance will improve with the adoption of Intelligent I/O (15O) architecture, which will address bandwidth problems in perview and across the zetwork by streamlisting data transfer rates and reducing processor involvement in I/O functions. It is scheduled for release in the second half of this year, Eurakan asys. There are servers with IrO support. but the orbitam exatt readyyet.

The first version of Hot-Plug Peripheral Component Interconnect (PCI) will be available later this year, making it possible to replace PCI adapters without shutting down the systems, which will reduce downtime. Compon will be showing that technology this week at PC Expo.

Support/Service Clustering Intel-based servers will make

service management more complex and service and support more important. A lot of Pentium Pro-server users now manage their servers on their own, but the complexity of clustering may increase the need for service and support, Barkan sars.

Sheridan agrees. "The service and support providers will have to offer more guidance and counseling in configuration, implementation and maintenance of these switches." he saws.

Which wendors will offer the best service and support remains to be seen, feven though wendors such as Hewlett Packard Co., Bland and Digital Equipment. Corp. offer global services, it doesn't mean that they will provide better service than a reseller. Barkan says, And vendors such as NCR Gorp, Anndahl Gorp and Tandem Computers, lttc. are used to providing a high level of support, but we sendors haven't proved they can do it in the new scalable NT centromengst cresi-

ed by Wolfpack, Barkan says.

The vendors that can support servers in mixed envisonments are in the best position because few companies operate in a single environment these days, Lowher says.

Price

Barkan predicts Intel server customers will get more for their dollar. He anticipates a 30% to 42% price/performance increase. Price will erream constant, but performance will increase, he says. He does expect some price increases. For instance, Sourway servers and larger will go up in price, but low-end servers will drop a bit, he predicts.

As vendors add more capabilities and processors to Intil servers, prices will processors to Intil servers, prices with cost, Sherida on says. If Intil servers come out with powerful, less expensive servers on a par with RISC servers, RISC endotes will retailate with either a comparable product or reduced prices, Sheridan says. Cl

to Malloy is associate aditor. Buyer's Guide.

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Speaking Productively: A Partnership Approach to TCO

This is a story about productivity. It's also a story about partnership. But it isn't a story about the horrors of TCD. You don't need another article to sell you when you already know; that PCs cost too much to manage, to run, to upgrade. What you need are assessers.

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Listening to our most important partiser. You. At Microsoft, when we set out to study 100 issues, we went straight to the source CIOs. If managers, System administrators. People like you who live and breathe cost of ownership issues every day. And who have a very clear idea of what the future could be if someone would just stop for a moment, and islain.

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A word about these partnerships. These sent simple inknet-handships deals; this is goldsninous teaminot, the don't just plus for the private and table. While is each chairs of fillow the hanner out specific with each cast of the simple country of the simple countr

"What does helping people and faster have to Everything."

Standards are empewerment. Our strategy is founded on standards. Standards are glue. Standards extend the value of a distributed environment by ensuring that all the precess fit together seemlessly. They aren't one company's idea of what comes next. Standards are simply this: readmaps. And they helders to us all

The fact that the Microsoft, Windows, PC environment is based on standards is no accident, And the result—that it has empowered militons of people to get more work done in less time—is no coincidence.

As the Windows PC errorement continues to neither, its ability to empower won't change. It will grow. From the handheid Windows CE, to the portable computer, the desktop PC, the Windows NT. Workstation, to the newest kild on the blook—the NetfOwder PC pattorn will enable people to be even more productive on matter where they are. Because while all these picces work separately. They also work in one other importation wy. Together. That's an interesting point to been in mind as you consider your next technology move. Because while others may offer technology they claim also works, the question is, what will it work with?

Enabling, not disabiling technology. With our partners, Microsoft will soon be delivering two key productivity solutions based on standards: The Zero Administration initiative for Windows (ZWV) and the Network PC. Take a closer look with the MAPP.

Designed as a complement to, rather than a replacement to, the complement to, rather than a replacement, to, your opposizon's easing envisionment, the Neticonert as exemple of how, with our partners, Microsoft has eliminated exitors obtain by eightering the standards for the comparate PC—without populationing the kind of flexibility and compatibility organization report to be productive. At the core of these light selection standards is in the right belience of restrictions control.

"Right balance" is the key phrase there. It offers the kind of control that allows your network administrations to remotely configure, upgrade, and manage systems (which meens, among other things, that individuals will no longer be able to install "junkware" on their work systems, But it also Choice is the power to select from any of more than 100,000 Windows compatible applications (including your own outside programs) to my outsidenses. But choice goes beyond what's here now, it's also about what comes neet. Seclarise choice enables the freedom two more forwards now techniques as you see fix, backed by the power of compatibility, interoperability, and interatible.

work smarter, better, do with lowering TCO?

includes a hard disk—which ensures that, even if the servers get busy or the network goes down, productive work doesn't go down with rt.

Moreleg if all fewered. But what about your existing decidedation of the second section of the second section indicates for the second section of the second section of the second section of the second section of the section of th

ZAW also enables the development and deployment of the widest range of applications and supports the last important concept we want to highlight today. Choice. An eventionary beginning, Add & et up.—Windows PC., the NetPC, ZMV—and you're left with the three basic tentes of our perthembay appreach to productivity. Empowerment, Simplicity, Choice, Together they comprise an endulcionary strateging that puts in TQD issue where it belongs: in the scont-to-be estinat catagory. And ends this story with abmething you don't other find: a new beganning.

By the way, if this strategy sounds like a productive way to solve your TCO issues, then take a moment and pat yourself on the back. The ideas came from you. All we and our partners did was take the time to listen. And make the commitment to act. Compact, Sensible Scalability, in Corrosa, with not not youthout both origin convention for the energy to their committee to being convention for the energy to these coals—with providing a full spectrum of Scalability and Scalability of the Scalability of Scala

As we worked with Microsoft on the NeiPC operification, it soon become clear to us that here was the missing poor. A computer designed for a new clear of end user, someone who needs the performance and compatibility offered by PC anthonous, but not the expendibility of the mainstratem PC. Add in 2MW, with its easy deproyment and management capabilities, and it is easy to see where this sechnology will take our outdoners. Straight to the bottom size, Add with the NeiPC.

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For end users, the HP Net Vectrs PC will delive to the same functionality as a tractional PC for semme, it will not horsoft Windows and micre than 100,000 applications. But from a company-wide prespective, the HP Net Vectra PC will not only outs less, it will lower costs in new ways, through centralized management capabilities. And it will include additional, compensation managemental managements.

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TRANSMISSION

or reasons unclear to just about everyone, more than 2.5 million people each week tune in to listen to a couple of auto mechanics from Cambridge, Mass., mislead callers about how to fix their cars. Well, maybe not mislead them intentionally. But Click and Clack Tappet, known around town as Tom and Ray Magliozzi, freely admit they don't know any more about fixing cars than the mechanic next door. It's just that

National Public Radio gives them a weekly show called Car Talk so

they can prove it.

Can mechanics and radio stars Click and Clack

Knowing that the Magliozzis are both MIT graduates, we thought it might be fun to find out how much the brothers know about computers. And Tom and Ray thought it would be a great time to plug their new World Wide Web site, cartalk.msn.com, which features audio clips, trivia questions, car reviews and more. Computerworld editor Paul Gillin spoke with Tom and Ray at the WBUIR studies in Boston.



Faulty transmission, page 98

TRANS-MISSION

CONTINUED FROM PAGE 97

CW: Bill Gates is worth about \$25 bills TOM: Wait, I thought you were Gates.

RAY: Hey, throw this burn out. CW: If you had that kind of money, what kind of car would you buy?

TOM: Well, it gets to the point when the amount of money you have doesn't matter anymore because you can only buy so much car. So the fact that he has ons and billions of dollars means he can buy lots of cars. Everyone should

have lots of cars. Because you never know what kind of mood you're going to be in." RAY: Like my brother. He has lots of cars. But none of them is worth more than 75 bucks.

CW: Are you guys PC guys or

acietesh guys? YOM: Oh, woo hoo hoo! This is: r-ending con RAY: I have one of each. So I've hedged my bets. But 1'll defer to my bro because he has some, shall we say, obser-

ons about them TOM: Well, I do have some feelings about them because I am, and always have been, a PC guy. In fact, at one point about five or sis years ago my wife, despite my urgings, bought a Macintosh. That thing either knew that I hoted it or whatever, but it never worked. Marintosh just makes me crazy. I don't think it's as itive as they try to make it out to be. And it certainly doesn't have technology

re that PCs don't have RAY: Of course, a few years ago, we vent to the computer store - [Tom] and I and my family — to buy a computer for the home. And he says, "You have to get a

TOM: (Laughter) Well, it was for his kid, who was going to get all these games that my kid already had. So he was going to get this big library of games. That's what the Mac is. It's a computer for playing games. If you've got anything serious to do, you can't do it on a Mac.

Oh. I see [producer] Doug Berman is notifying us that our show is edited on a Macintosh. And that's why it's so lousy! I've been telling you guys this for years!

car that works. "Alright, who wants it this the Internet and the Web?

RAY: Ah! The real value. I think it is going to keep people off the streets at some point. It will reduce crime because people will stay to trons on book 1 It will reduce problems that people have le will stay in front of their screens

CW: You guys went to MIT. A lot of our ers are technology guys. How can

ry, too, set themselves up for a career in to mechanics? TOM: Flunk Soil RAY: Torice! Haughter

TOM: That's the freshman physics surse I had a little trouble with RAY: In his junior year! I decided along the way that I didn't really want to be an engineer. I didn't

want to design windshield wiper linkages "There's nothing like a few bursts from the air chisel to sober up a recalcitrant

hard drive " - Tom Wagliozzi

> for the rest of my life. I wanted to do mething that was more fun. And that was to resair windshield wiper linkages for the rest of my life. And I've potten quite good at it, as a matter of

CW: Why should a computer professivisit your Web site, cartalit.msn.com? TOM: To waste time. This is timewasting central. If you're going to goof off, you might as well goof off with us

because we have fun. RAY: Realize that Americans work too damn hard. You go to Europe and every one is always on vacation. We think peonie need to poof off more and be less dedicated to work, so we're doing our small part with our site.

CW: You guys are mechanics. What good Suov of and RAY: Are you kidding me? They have

made cars so complicated that the aver age loe can't fix 'egn, so they have to bring TOM: And you can't fix them either. RAY: Well, no, but we keep them until another one comes in just like it, and then we swap parts. We had to offer one

week?" [Laughter] CW: What do you think is the real value of

in personal relationships. People won't have to deal with one another on a per-

TOM: But when you come right down to it, the real value is it has allowed nerds an opportunity to be anonymous

RAY: To talk to each other TOM: No, to talk to babes. I mean, no nerd would dare talk to a female for the last thousand years, but now you can type it. Remember all those college mixers you went to, and all the nerds with the ax pens stuffed in their pockets would just

sit against the wall? No more. Pimples on your back? No problem? CW: Cars are getting more and more of zed. How does that change things

or you as a mechanic? RAY: We couldn't figure them out when they had no computers, and we still can't figure them out!

CW: You know that a computer has best-en a grand master at chees. When is a computer going to be able to replace an auto mechanic? RAY: Soon, I hope

TOM: You'll notice that it was an IBM computer that beat Kasparov. I wonde if it had been a Macintosh if it would

RAY: Computers have started to replace mechanics already. We can't fix anyth anymore without talking to the car's computer. We hook up the scanner to the car's computer, [and] it feeds us infor-

CW: Has any computer over stood out in your mind as especially memorable or

RAY: The one that always comes back to me is my very first computer. The first time is always memorable. TOM: You took her to the drive-in.

RAY: My Radio Shack TRSSo, which I bought I think in 1979. I was able, on this thing, to do word processing, statistical analysis - certainly not to the extent you can today though

TOM: How big was the hard drive on RAY: My current computer has 32M

bytes of RAM. This had 4K. [Laughter Four thousand bytes, and it worked! mean that's the missele of it TOM: And you did everything you had to do with it?

RAY: I did everything I do now! Now, [Microsoft] Word takes 50 megs of memory to work. The TRSSo had a cassette TOM: Yeah, my kids used to put Grate-

ful Dead tapes in there. CW: If you guys had computers wh

were kids, do you think things would have turned out differently? TOM: I notice our kids don't go out and play as much as we did. Their playmate is

their computer RAY: That's probably making a who constraint of antisocial wackers. TOM: Oh, absolutely. Secessionis

[Laughter]

CW: Is there anything that people who fix computers can learn from people who fix

recalcitrant hard drive.

RAY: We've got to introduce them to the concept of air chisels TOM: There is nothing like a few bursts from the air chasel to sober up a

CW: What's the toughest proble ever had as a computer user, and how did

TOM: Oh, the viruses RAY: Oh, don't tell me about the viruses. Let's not talk about the viruses TOM: That was the biggest real prob lem I ever had. Wiped out everything. I didn't fix it. I bought a new computer. I

threw the old one in the trash, Actually I put a new drive in it, and it's now my backup computer. CW: Which one of you is the bigger com

RAY: It's my brother. Even though I own more computers, my brother is the TOM: That's because I bought a cor puter back in 1979, and I have been

struggling for ao years to figure out how the hell to use it. They really are too hard. Even now they're too hard. RAY: Do you know what the problem is? It's that geeks - I don't mean this in a bad way - but geeks design them. They aren't designed for the average per-

TOM: It also is their way of feeling superior.

RAY: Have you ever called some tech support line, and they say, "Well, check our high mem - blah, blah." You say, What the hell is that?" They talk down as though you are the scum of the

earth because you don't know how to TOM: That's the way the give wer with the 25 pens in the pocket and the pimples on their back that never got anyone to dance with them at those college

RAY: They are getting even no TOM: They're saying, "Oh, hi there This is Merlin. Remember me with the slide rule dangling from my hip?"

RAY: "Remember the junior prom? You

want to defrag your hard drive? Defrag this, baby, "D

Gillin's Internet address is peul gillin

O COMPATERMENT



10 Mbps switching to the desktop sounds like a great investment.

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IT Careers

SPECIAL REPORT:

IS EDUCATION - CRISIS OR CROSSROADS?

Information technology:

BIG MAJOR on campus

marketplace," says Jerry Batt, vice presi-

Consumer Billing division in Dallas.

"And I don't think the supply-and-

ply and demand remains an issue. But

says he wishes there were more students

to choose from, but he adds that he's en-

couraged by their enthusiasm for the IS

profession and their demonstrated in-

dustry knowledge: They seem to have a

sense of purpose and are insightful and

Batt's division starts eyeing students

late in their sophomore year, when they

have to declare a major. He makes sure

his IS group is well-known to Texas col-

lege students by making personal ap-

pearances and giving class lectures

Elsewhere, companies offer internship

programs, endow faculty chairs or con-

tribute equipment to state colleges con-

strained by tight budgets. Universities are capitalizing on industry's willingness

to forge alliances with academia, and em-

ployers gain from increased visibility

among potential recruits and the oppor-

well-read

across the state.

Even with increased enrollments, sup-

demand problem has hit bottom vet."

By Leslie Goff

FTER YEARS OF shunning recent college graduates in favor of experienced information systems professionals, MCI Communications Corp. last year launched an ad hoc campus recruiting effort to draw new talent into its IS ranks

Working on a directive from Chief Information Officer Lance Boxer, the company's Colorado Springs IS organization

placed a young, articulate and exuberant main-College scouts are back frame production coordinator in charge of information technology recruiting. That coordinator, Abbie Plessman, traveled to

more than 25 universities across the country to sing the praises of working at MCI and, more important, to identify strong candidates for technical support positions throughout the company.

are making introductions "A college hire can bring a lot of energy and new ideas to a company," Plessman says. "With the |British Telecom earlier in a student's life munications PLC] merger and the company growing so fast, we realized that we need really good, talented people

coming out of school, whereas before we only hired seasoned employees. But industry trends have changed, and hiring needs have gone along with it." Campus recruiting is back. Staffhungry IS departments are identify-

ing candidates early in their college careers and following them through graduation. Campus recruiters want it all: college graduates with a good foundation in business pro-

cess analysis and design communication and teamwork skills. technical know-how. understanding of both classical and cuttingedge programming languages and tools, and plenty of energy

But employers' march back to campus is mainly fueled by their overwhelming need for Cobol programmers to satisfy year 2000 conversion project requirements.

Editor's note: This week, Computerworld concludes its four-part series on IS education, written by Leslie Goff Parts 3 and 4 this week take a look at campus recruiting trends and the

growing debate over the role of colleges in producing marketable graduates. The full text of Parts 1 and 2, which looked at IS college enrollments and changes in IS curriculums, can be accessed at our World Wide Web site at your computerworld com

al technology up to date," says Gordon Davis, a professor of MIS who holds a chair at the Carlson School of Management at the University of Minnesota at Minneapolis, The chair is endowed by

tunity to try before

We recruited the

sponsors because

what they're doing

[in IS] is often ahead

of what's going on

in the university

and it also brings in

funds that help us

bring our education-

they buy.

Minneapolis-based Honeywell, Inc.
"We have the highest number of gradrates placed in jobs across the whole pus hires were earmarked for mainframe ess school," says Eleanor Jordan who heads up the faculty of the manage ent sciences and IS department in the There's no such thing as a cheap Cobol programmer anymore, because not a College of Business at the University of lot of young ones are coming into the Texas in Austin. "It's been pretty close to 100% placement for the last three or four dent of billing systems at AT&T Corp.'s

And salary offers made to IS stud are consistently the highest at the college. ranging from \$33,000 to \$44,000 and averaging \$38,700 for this spring's grad-uates, Jordan says. "We had one student who got \$60,000 from a consulting firm because he had had two internships" relevant to its practice area, she says

News like that travels fast and attracts defectors from other areas of the business school and nonbusiness majore When we recruit, we find more students than we used to coming in from other majors and seeking IT jobs. And we're glad to consider them," Jordan says.

It's up to employers to capitalize on the enrollment increase in the face of a shrinking pool of experienced candidates, Plessman says. "Companies need hiring college grads than they were in the part. They need to plan ahead and think about more formalized recruiting strategies to generate a good pool of kids to choose from," she says, "The sooner you can pull a kid into your workforce, the

better the investment "C)



with a venocance and

IS FOUCATION - CRISIS OR CROSSROADS?

Workforce Outlook:

SKILLED for TODAY, or TOMORROW?

HANGES IN INFORMATION systems degree programs are drawing new students to the major, and IS recruiters are taking advantage of the increase in enrollments. But the shift from traditional computer science classes to those that focus on specific tools and languages is fueling a debate over the role of the university in shaping students' long-term career prospects. try, refocused the curriculum on client/ The pressure on business schools to matriculate ready-to-server-based tools and architectures, em-

al Basic. In a move that drew some resis-

tance from campus recruiters, the school

dropped Cobol from its requirements

last year and added new classes such as

Advanced Data Communications, and

In contrast, enrollment in Harvard's

program has crept up slowly but steadily

over the past 20 years. Selzer notes. The

bachelor's degree in her department fo-

cuses on problem-solving, systems de-

sign and the software development pro-

classes in C or other languages. At the ju-

nior and senior levels, the curriculum of-

fers a "very classical computer science

education," with general courses in oper-ating systems, languages, distributed sys-

tems, computer architectures and com

pilers. The use of specific tools is

"We are not training people to be IT ofessionals." Selzer says. "We are

teaching them a discipline that is obvi-

ously becoming more important in to-

day's society ... and the particular tools

committees at the University of Texas,

Texas A&M University and Virginia Poly-

technic Institute and State University.

notes that industry doesn't expect acade

mia to become an 15 training ground

"They can't teach every application and tool," be says. "Industry has to provide

lems and who can integrate the diffe

degree programs in IS, Batt suggests, "If

you look at the explosion of new IT re-quirements and capabilities, combined

can adapt quickly on the job."

Jerry Batt, vice president of systems at AT&T Corp.'s Consumer Billing division and a member of the industry steering

integrated into those broader topics.

The Internet and Intranets

produce entry-level IS professionals has phasizing courses such as C++ and Visu-The debate is growing reached an apex as companies struggle to

new application development projects. As recruiters swarm campuses seekover the role of colleges ing skilled graduates, industry is pushing to produce career skills

vs. market needs

ools to adopt new curriculums based on distributed architectures and client/ server computing and urging them to add courses in business com and teamwork skills. But industry also mands that schools not eliminate any of the old standbys such as Cobol and

staff year 2000 conversion efforts and

mainframe fundamentals. With only four years to cover all that ground, business schools are forced to make trade-offs that both please and distress the larger IS community. Stude favor classes, that cover the hot topics of the day - Introduction to Java is a lot more crowded than Introduction to the Mainframe. But many critics complain that retooled IS degree programs that

focus on new technologies start to look a lot more like vocational training than university education. "We are not

> says Margo Selzer, a profess of computer science at Harvard University's department of engineering and applied science "I firmly believe that universities that target their students for corporate 15 careers are doing both the students and the corporate IT world a dis-But local industry is pus

a trade school.

ing many state-supported business schools to adopt heavily technology-centered curriculums. Recent changes in the management science and IS curriculum at the University of Texas in Austin, widely considered to be one of the best IS programs in the coun-

The new IS curriculum at the **Carlson School of Manage**

The faculty of Carlson, at the Univ nesota at Minneapolis, based Its MIS on the recently released IS education established by a joint committee of the Computing, and the Association for tion Systems. An Adobe Acrobat de

Two years of required general bust

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available to large corporate organizations
- IS Management and Supervision, which
covers Harvard Business School case studi nd the organizational issues that face IS

dectives that introduce stude

that. On the steering committees I've served on, we're in agreement that what with the fact that very few older technolwe want is graduates who can solve probogies simply go away, it's very hard to put all of this into four years," he says. design methodologies and technologies But the academic community is constrained by budgets, faculty and other re-sources, so it is forced to make trade-offs. ey've learned in such a way that they Their question usually becomes, What is most in demand by industry? and then One solution to the training vs. education quandary might be to offer five-year

they try to straddle that," Batt says. Cl Goff is a freelance writer in New York.



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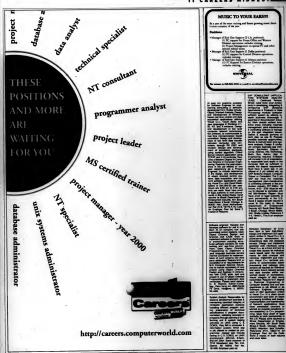
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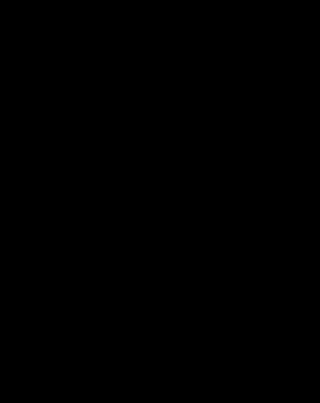
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The Week in Stocks

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N D U S T R Y A L M A N A C. EMC rides high on storage

MC Corp. (NYSE:EMC), an enterprise storage vendor in Hopkinton, Mass., is riding high these days. Its stock price has hovered around \$40 in recent weeks — deuble its price a year ago, Analysts say that is because EMC is starting to dominate the high end and mainframe mass

torage manners.
The company took a hit in April when its stock price dived on, from \$41 to \$32. It improved, however, in May. That necouraged Paint-Webber, Inc. in San Francisco to upgrade

Paul Weinstein, managing director at PaineWebber, says the ice was "crushed" due to a glut of inventory, something he ects to be resolved in the second half of the year. spects to be reached in the second half of the year.

Aker, Brown & Soon, Inc. in San Finacisco lists EMC as a rong Buy, meaning it will far outperform the market. "It's intentire because of their leading open systems position in the gland of masts storage and their leading market share in ainframe mass storage," according to a statement from also the Maryon.

emerys. The reurspore.

It helps that EMC provides software for storage management, he says. "The business of mass storage is no longer simply delivering hard-disk drive capacity, but rather one of delivering storage functionality so that users can best leverage status in the storage functionality."

g storage nanctionauty so that users can one servings hardprise information," Respirit says. Welnstein says he expects EMC to charge shead in the com-ing months. "The key is their open systems business," he says. It will be the driving engine in the next two or three years." Salomon Brothers, Inc. in San Francisco lists EMC as a Buy,

th earnings of 49 cents per share expected by the end of this a summings or agramms per sname expected by the end of the oth, when the second quarter draws to a close. That com-es with earnings of 36 cents a share in the same period a r ago. — Matt Hamblen

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WHAT'S THE DIFFERENCE? · Works like a PC Has no floppy drive Operating system and as are managed and loaded cent Box is sealed so users can't change Network computer . Work is done at the server level · Costs less than PCs . Managed remotely and centrally

rally has no hard disk drive

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CONTINUED FROM COVER I

lyst at Dataquest in San Jose. Calif., said users should ignore the hype of hardware that was designed to cut costs - such as the network computer and the NetPC - and first move aggressively to address the management issues they face. Chris Goodhue, an analyst at

Stamford, Conn.-based Gartner Group, Inc., has even advised sations to hold off on any until the middle of _____DESKTOP major investments. next year or so. COSTS "Compelling" management themselves," said Dave Quady, a pieces will fall into place around

that time, he said.

Users at this week's PC Expo in.

New York will find plenty of of .. ferines that feed the hype and showcase the vast array of deskton choices But leading the pack, and pre-

empting that display, is the formal unveiling of the NetPC. Gartner called NetPCs, which are based on specifications laid out by Intel Corp. and Microsoft Corp., the heir apparent to the plain-Jane desktop PCs and their sometimes unnecessary always more expensive bells and

About a dozen suppliers are lining up to unwrap boxes that support the NetPC reference including heavyweights spec, including heavyweigns IRM. Dell Computer Corp. and Compaq Computer Corp. The NetPC spec calls for a sealedcase PC without a floppy drive or fancy peripherals. It was deshooting and centralized software distribution and manage

ment - all of which can belo reduce total cost of ownership The NetPC, which also Rutures management software underpinnings, is turning heads at companies that include Norwest Corp. in Minneapolis, Norwest

hopes to reduce annual desktop costs from about \$9,000 to \$5.500 'This should prevent the kind of end-user futzing that occurs when users have a floppy drive or try to change things

senior systems engineer at Nor west and a beta tester of IBM's NetPC. Norwest has aq,ooo PCs in more than 1,600 offices around the world.

Norwest already physically disables floppy drives and uses an IBM product to support remote software distri-

To cut costs further, Quady is considering using IBM's LAN Client Control Manager, which will ship with its NetPC, and Intel's LANDesk software, a remote troubleshooting and software distribution application. Enabling remote trouble

shooting and a centralized backup for what is stored locally should help, Quady said. Norwest favors the NetPC model over server-centric petwork computers because it won't have to switch applications or change its server or network infrastructure to support the NetPCs, Quady said.

"The NetPC steals a lot of the twork computer's] thunder. because it preserves a compo my's current investment in software." Brookwood said. But Brookwood also noted that management is becoming more important as the desktop becomes increasingly fragment ed because of the multiple options for personal systems.

Although Microsoft's Windows operating systems will incorporate many new managem tools. Windows NT So and Memphis — the next version of Windows or - probably won't ship until next year

For now, users can get add ons for Windows 95 and NT 4.0 that contain Zero Administra tion for Windows. Meanwhile, usees such as

Paul Maszczak, a corporate director at CR Bard, Inc. in Murray Hill, N.J., use "virtually some of everything out there." Maszczak nupports about 4.000 users. He said he is look ing at several management packages, including Microsoft's

Systems Management Server and an application from Plati num Technology. Inc. He said many manag apolications fail to continue to

work once hardware or software configurations change Maszczak said he is evaluat ing NetPCs for about 500 users but is concerned that some users will consider them an "ego buster." But, he noted bermuse ly. "I'm sure we'll get past that when we make the cost vs. bene-

fits known, "O

Users take direct turn to cut costs

torio skille "

One PC maker, who requested aponymity, said most manufacturers have margins in the range of 15%. He predicted that the more direct sellers sell to corporations, the more they'll begin to lose margin advantage because they'll have to build extensive infrastructures of sales and support staff. so from a reseller

"Those companies that reuire us to go through a reseller give us a pain in the neck," said Briscoe Stephens, the advanced scientific information systems coordinator at NASA's Marshall Space Flight Center in Huntsville, Ala. Stepheos said resellers gener-

ally don't have up-to-date technical information. He said it can take up to three months to get products from a reseller com pared with a week by going di-Jacqueline Germany, director

of enterprise networks at World Color Press in Greenwich. Conn., said the also prefers the direct approach. "You get everything for one price," she said. You don't get anything valueadded that bumps up the price, like bundled software."

That's a key point, said John Dunkle, an analyst at Workoup Strategic Services, Inc. in outh, N.H. "Direct selfers [go] to great lengths to cusnuze the software preload - adding the perception of value." According to a recent Compa-

terworld poll of \$36 users at communies with more than soo employees, 21% said they buy notebooks from the manufi turer by telephone, and 35% said they order from a reseller. Of Loof PC users, 24% said they purchase PCs from the manufacturer by phone, and 14% do

Dunkle said users will increasingly turn to direct sellers such as Dell Computer Corp. in Round Rock, Texas, and Gateway aooo, Inc. in North Stoux City, S.D., for PCs and lantons In recent months, even desk top kingpin Compaq Computer Corn. in Houston redoubled its

off-again, on-again efforts to be more direct in its sales strategy. Compan officials said the company will build to order in some cases, and it will let its resellers do some on-site assembly of machines.

But many users still prefer re sellers.

We think we get better support through the resellers," said Vincent Malino, manager of information technology architecture at Prassir, Inc. in Danbury, Conn. "From time to time, we toss around the idea of a direct sale, and we are open to it in the future - if we can save money."D

Senior writer April Jacobs con tributed to this story. PURCHASING CHANNELS

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COMMENTARY

Pardon me while I vent David Coursey

should have been running my business today. In- be complete. Now, 16 years later, I can fill stead. I just finished reinstalling my mail server -

Every few days, I bear

from someone who's

server or application

tust isn't easy enough to

install, use or maintain.

Walt Mossberg, the dis-

tinguished technology

columnist at The Wall

right when he wrote

not your fault."

Street Journal, got it

Computers are too hard to use, and it's

When I got started in personal com

puting with a CP/M Kaypro, it seemed

that if only I had a 1,200 bit/sec. modern

upeet that this or that

for the third time, I believe. It's 9:45 p.m., and between us. I and my long-suffering IS guy have been at it all day.

We don't know why we had to mest around with the mail server, mind you, but we did. And we're none too happy

OK, I'd been warned about Microsoft Exchange, and I didn't listen. Nor did I listen to the warnings about Windows NT 4.0. But having spent about 100 hours (spread over three months) messing with this machine, I'm exasperated. Sure, I like Microsoft Outlook, and if I really want to make the most of it. I've got to use Exchange. But at some point, it makes more sense to actually do the work than mess around with tools that are supposed to make the work easier but

From the E-mail I set, I know you

a aG-byte hard drive and redline a aco-MHz Pentium with hardly a thought. Am I doing more with this computer? Sure, but one thing has remained almost constant: The amount of time the computer saves me is offset by time spent getting the computer running and keeping it happy

> ROSOFT'S ROLE Microsoft is a major entributor to the problem. Everything Microsoft does is supposed to be easier to use, but it never quite is. Every user interface is supposed to have been test ed on hundreds of lab animals, et, users, but

the interfaces change so quickly, I have to wonder. Yes, I love Office 97, but did I really need it? Especially with the RTF file format/interop ability problem that won't be fixed until the "service" release this summer? I feel and a toM-byte hard drive, my life would like I've been serviced, all right.

Are we really well-served when we're forced to do all this learning and relearn ing on an almost annual basis? Microsoft talks about reducing training costs. Has it figured out how much we'd save if it simply left us alone for a while?

You'd think that having va the competition. Microsoft might slow down a bit. That will never happen, of course - Microsoft has to keep us Windows addicts buying software upgrades so it can invest billions of dollars in cable television, among other things

Next thing you know, we'll need Microsoft software to watch TV. The good news is that, if that software is as unstable as my Windows 95 desktop, our children will soon be quite safe.

available at unou coursey.com. His E-mail

Forget the rating system, just buy MS-TVOS and you won't have to worry about what the tykes are watching ever End of flame. C

Coursey, an analyst and consultant, is editor of "courses core," an ordine new ddress is david@coursey.com

Dirty little secrets of Java, ActiveX Frank Haves

hat are Sun and Microsoft waiting for? The stand-alone program. brain trusts that gave us Java and ActiveX are sitting on technology that will solve the biggest problems with those Internet software development systems. But nobody seems to be in a big hurry to get those fixes into the hands of users.

Java and ActiveX need some help. Java. Sun's system for building Internet software, is great at protecting a user's system from damage that a truant lava app let might cause. But Java software has to be downloaded each time it's used, and it runs painfully slowly

ActiveX, Microsoft's system for building Internet software, runs as fast as any native Windows application. ActiveX components also install themselves on a PC, so they don't have to be downloaded again and again. But because ActiveX allows' complete access to your system. ActiveX components can erase your hard disk, send your files to remote locations and generally wreak havoc.

Sounds as if you've got to choose your poison, doesn't it? But it isn't true. The dirty little secrets of Java and ActiveX are that Sun and Microsoft have the

technology to fix those " problems but aren't us-

Take Java'a perfor-mance problems. There are two easy ways to peed up lava; with a just-in-time (JTT) compiler or with caching. A IIT compiler grabs

a Java applet just before it runs and optimizes it on the fly to run faster. Netscape Navigator and Microsoft Internet Explorer have JIT compilers

But Sun's JavaSoft division -- which has Java accelerator technology - still doesn't include it in the standard Java Development Kit. The result: A Java application such as Corel Office for Java runs fine inside a browser but drags as a

But beowsers have their own problenss. To run a Java applet that's part of a Web page, the Java files must be downloaded and run through the JIT compiler. That chews up a lot of time and makes users feel like Java takes forever to start. And then, after it has finished run ning, the Web browser throws the applet stony. So the next time you want to run that applet, you have to again wait for it to download, and HT-com-

Dumb? You bet, If lavaSoft arm-twisted owser makers to cache lava applets the way Web pages and pictures are cached, they wouldn't have to waste all that

What's holding up these improvements? Is JavaSoft too busy stamping out bugs in the latest release of Java? Or is Sun wor ried about alienating Symantec, Borla and other companies that sell JIT compil-

ers? Would Java caching give browsers too big an advantage over Sun's network computers - or does Sun naively think Java's performance isn't a problem? Meanwhile, Microsoft is sitting on solutions to ActiveX's security problems.

Last year, in the midst of a buying bir Microsoft snapped up a Berkeley, Calif-based start-up called Colusa Software.

Colusa'a main product, OmniVM works a lot like Java's virtual machine, ex cept that OmniVM uses C and C++. ActiveX's languages. It supposedly runs programs as fast as compiled C++ code. And, like Java, it runs programs in a se-cured "sandbox," which would keep ActiveX components from misbehaving

Microsoft executives waxed enthus tic last year about their plans to use Colu sa'a technology. But where is it? In Micro soft worned that the new compilers and incompatible code format OmniVM ires will scare away ActiveX develo ere) It it afraid OmniVM will look like a Java rip-off? Or is OmniVM mired in the swamp of the delayed Windows 97? Or are Microsoft and Sun keeping those technologies in reserve as true

cards each can play against the other? You'd think by now they'd have learned wo key rules of this game of Intere time: Don't hold your cards too cloer, and don't hold them too long. Because what you don't use, you'll lose.

And that includes customers. C

Hayes is Computerworld's staff column His Internet address is frank hayes @cw.

JAPANESE INVENT WIND-UP PC ... REALLY

Folks at Selke Epson in Japan were so fed up with dead laptop batteries, they in-

vented a hand-cranked PC. "A user is abin to input his own kinetic energy

into the system by

turning a winding key... similar to

to U.S. Patent No. 5,630,155, sun ed May 13. When the battery starts to

die, a red-alert message tells the user to crank the mainspring. - Mitch Betts

> · More dangers of E-mail to the Dead Voters Society



Usenet forume

Usenet newsgroup discussion threads found recently on the Internet. You may be able to nick up the thread by entering keywords at www.deranews.com.

wrong users (comp.risks) · Java vs. C++ performance

· How do you code in front of strangers [at a job interview]? (comp.software-eng)

(comp.sys.dec) Why people accept bad key-

boards (alt.folklore.computers) Tubes in computers talt.folklore.commuters)

Nearly 17% of the people comparison (comp.software-engl on U.S. voter registration lists are dead or have moved away, according to a database study on the Internet's Dead · Why not Solaris on Alpha? Voters page (products.

aristotle.org/pages/ deady.htm). Arizona has the most deadwood on its voter lists. Alahama the least





You know the Dummics books, Now meet Bubbe, the mascot/spekesmodel of Stupid PC, Inc., an Atlanta start-up (www.stupidec.com) out to prove that buying e PC can be fun. The Stupid PC costs \$795. The price includes e 133-MHz Pent lum processor, 2G-byte herd drive, meniter, medem, two free months of internet access, e cup holder and e geeky T-shirt. Stupid PC offers free delivery end eetup in the Atlanta area - PCs ere delivered like pizzee by e fleet of colorful Volkswagen Beetles - end hopee to go nationwide in eix months.

Inside Lines

Rent me some groupware.

At this week's PC Expo in New York, Lotus will take the wraps off ant Team Room, a rentable collaboration application for Llonersons, sources said. The application was designed to be hosted by met service providers and accessed via Web browsers.

This funny money ain't so funny ...

internal chargebacks for IS services or resources have often rided as "funny money" transactions about shared corpo ces. So, who uses the most? One large company turn were that monitored its mainframe for chargebook i nd out the monitor was consuming a full 30% of the mai

Chairmen of the billboard

seps flaring in Silicon Valley. Inmix last week replaced its "Dinosaur Crossing" bills deCEOLarry mix's apology for accusing a group of engineers w acle of taking trade secrets with them. Meanwhile tchell Kertzman said he thought about putting a bil een the two equabblers with a quote from "Clowns to the left of me, jokers to the right."

Yes, but will they crash?

Ellison fairly bristled last week when he was asked how many net-work computers Oracle had shipped or taken enders for thus faz "That" a little like asking the Wright brothers, "If air travel is so good, how many passengers howe you flown?" "Ellison polified.

Show me the rehate

ROWS MISS. AME: Townson.

Chicains at U.S. Rebebicios said a "floomson error" that caused a mix-upgetting rebotes to users of 33.6K bit/occ. moderns was fixed, and
cicks have been sent. The company said the fulfillment house hanng the rebotes solutaisenly sent out postcards telling users they

nah choice

ISIN CROMAC

or at SAP AC's European user group contrement.

Mills choics. SAP had to share space it an Amsterdam convention

with the international Headache Society. A sign at the ence directed users to go left for the user group conf Headuches." No word yet on how many R/c users

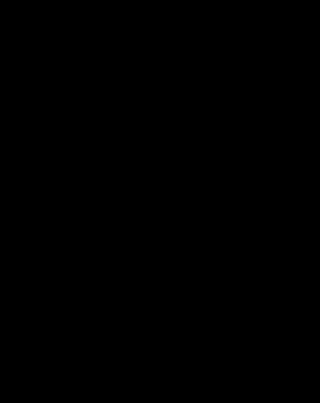
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Racking up the miles

ast Thursday wasn't a great technology day at Microsoft. When a reporter called to ask why www.microsoft.com was maccessible, a company spokesperson explained that she whad E-mailed a request for information on whether or not the site had a problem. But soon after, her E-mail server went down. If you're having trouble getting through, give news editor Patricia Keefe a call at (508) 820-8183, or E-mail her at patricia keefe @cw.com



The Back Page

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THE NEW WEB-TUNED LOTUS 1-2-3 HAS ARRIVED - WHY JUST CRUNCH NUMBERS WHEN YOU CAN CRUNCH COMPETITORS?

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